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February 1989

ENVIRONMENTAL
IMPACT
REPORT

Addendum

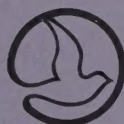
Volume 2B: Response To Comments

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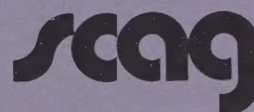
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UNIVERSITY OF CALIFORNIA

1988
Revision
to
the
Air
Quality
Management
Plan



South Coast Air Quality Management District



Southern California Association of Governments

February 1989

**ENVIRONMENTAL
IMPACT
REPORT**

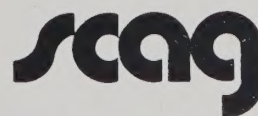
Addendum

Volume 2B: Response To Comments

1988
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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Addendum to Final Environmental Impact Report 1988 Revision to the Air Quality Management Plan

SCH No. 88021022

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Executive Officer**

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February 1989

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RESPONSES TO COMMENTS

COMMENTS A THROUGH MM



JAN 31 1989

CITY OF ANAHEIM, CALIFORNIA
Public Utilities Department

January 30, 1989

Ms. Suzanne Reed
Special Projects Coordinator
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Re: Anaheim Public Utilities Department's Comments on the Air
Quality Management Plan

Dear Ms. Reed:

The Anaheim Public Utilities Department (Department) has reviewed the Air Quality Management Plan (AQMP) and has concerns with specific items contained therein. The Department believes that bringing the South Coast Air Basin into compliance with Federal health based air quality standards is of utmost concern to industry and all residents. However, the means to achieve these air quality standards should be chosen to protect the safety of all our residents and minimize, where possible, the costs of meeting these health based standards. The Department does not believe that specific recommendations of the AQMP meet this criteria.

A-1

A-2

A-3

A-4

A-5

The AQMP should present a means of achieving Federal Clean Air Standards using existing, commercially viable technologies. Otherwise, the AQMP might have severe, harmful effects on the regional economy with little of the benefits necessary to justify its implementation.

The Department believes that a ban on the use of diesel generators to provide back-up power for water pumping purposes is unnecessary and a potential danger to public health in the event of a prolonged electric outage or a natural disaster. It is likely that long-term interruptions of electric power will be accompanied by natural gas interruptions, reducing water availability at a critical time.

The Department, as the third largest electric utility in the basin, is concerned about assumptions used in the AQMP that suggest technological advancements in the next few years will allow electric power to replace other energy sources.

**RESPONSES TO COMMENTS
CITY OF ANAHEIM (1/31/89)
COMMENT LETTER A**

- A-1 Ambient air quality standards are set by the federal and state governments in order to protect public health. As noted in the response to comment 1-1, the AQMP is the only alternative, with the exception of the "More Stringent Alternative," which meets federal air quality standards. Please refer also to the response for comment 2-12.
- A-2 Your comment is noted and will be forwarded to the District Board for consideration. Please refer to the response for comment A-1.
- A-3 The potential impacts of the AQMP on the regional economy are discussed in Appendix F. Please refer also to the December, 1988 EIR, Section 4-18.
- A-4 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.
- A-5 Your comment is noted. The assumptions used in developing the electrification strategy can be found in Appendix IV-B -- Tier III Control Strategy: Energy Future and in Attachment #5.

000493

Ms. Suzanne Reed
January 30, 1989
Page 2 of 2

A-6

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. Please refer to the responses for comments A-5 and 42-5.

A-6

Superconductivity research has yet to show any immediate promise for increasing transmission capacity by the turn of the century. The Department has serious reservations about the commercial feasibility of fuel cells as a means of generating large amounts of electricity for residential needs in the next decade. Unless the sources of additional electric generation resources reflect reasonably expected to occur technologies, the Department believes any attempt to substitute electric power for other fuel sources is doomed to failure.

The Department would like to cooperate with the AQMD in meeting the Federal Air Quality Standards. However, the AQMD should be realistic with respect to the abilities of the Department to meet the additional requirements that would be placed upon it.

Respectfully,



Dale L. Pohlman
Assistant General Manager-Power Resources

c: David Kolk
Central Files

000494

WORLDPORT

FEB - 6 1989

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Board of Harbor Commissioners
Ira T. Disentfield, President
Jun Muri, Esq., Vice President
E. Grace Payne, LL.D.
Robert G. Radus, Sr.
Floyd Clay
Peter Mandia, Secretary
Ezraal Burris
Executive Director

RESPONSES TO COMMENTS
PORT OF LOS ANGELES (1/30/89)
COMMENT LETTER B

January 30, 1989

Suzanne Reed
Special Projects Coordinator
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

The Environmental Management Division of the Los Angeles Harbor Department has reviewed the Final EIR and the appendices of Air Quality Management Plan. The attached comments highlight those portions of the Plan and local government measures that are of concern to the Harbor Department.

Thank you for this opportunity to provide our comments and concerns. You have the Harbor Department's cooperation and support as the South Coast Air Quality Management District moves forward to meet the challenge of a clean air future.

Sincerely yours,

Lillian Y. Kawasaki

Lillian Y. Kawasaki
Director of Environmental Management

LYK:DBA
cc: Barbara Sullivan, Principal Planner, Southern
California Association of Governments
Ron Deaton, Office of the Chief Legislative Analyst

Attachment

(Responses to comments will begin on a following page.)

000495

ATTACHMENT

The comments are as follows:

SCAG MEASURE NO. (3b) Diverting Port-Related Truck Traffic to Rail

The Department is committed to diverting truck traffic to rail through a number of measures including the development of on-dock or near dock intermodal yards. A feasibility study of potential on-dock rail facilities has been undertaken. As such, the Department supports this measure. Our concerns regards the optimistic implementation schedule. Provisions must be included to ensure that no sanctions would be imposed if the schedule could not be met as a result of conditions outside the Department's control.

SCAG MEASURE NO. (10) Rail Consolidation To Reduce Grade Crossings

The Department supports the concept of a consolidated railroad corridor. The Port's responsibility for the corridor cannot be extended to the area between Los Angeles and San Bernardino. The Ports of Los Angeles and Long Beach are analyzing the rail corridor boundaries between the waterfront on Terminal Island, including both POLA and POLB terminals, to Washington Boulevard near downtown Los Angeles.

As indicated for measure 3b, the implementation schedule likely cannot be achieved as written. However, rather than "obtain financing between 1988-1990" the Joint Powers Authority, once formed, could develop a financing plan between 1988-1990.

Development of the railroad corridor is part of the Port's overall program for truck traffic reduction.

AQMP MEASURE NO. (I-2) Control of Fugitive Emissions from Marine Vessels

The Draft AQMP identifies this as a strategy the SCAQMD will implement in 1991. The U.S. Coast Guard is currently developing national standards for controlling fugitive emissions from marine vessel operations. The Harbor Department favors a national regulation instead of state or local regulations so as not to be put in a competitive disadvantage with other ports throughout the country. Individual state or local regulations would allow states to individually regulate the fugitive emissions thus making compliance for vessels visiting numerous ports, confusing, expensive and inefficient.

AQMP MEASURE NO. (I-5) Limit on Sulfur Content of Marine Fuel Oils

This proposed control measure could significantly reduce bunkering operations in the Harbor as the .5% sulfur content limit primarily affects California crude oil-based fuels. Such a regulation could greatly reduce the availability of acceptable bunker fuels produced locally and could negatively impact the operations of several marine oil terminals in the Harbor. The limited availability of low sulfur fuels locally could also result in higher operating costs (fuel costs) for those shipping lines calling at the Harbor, with potential concomitant loss of business for the Port.

AQMP MEASURE NO. (F-8) New Source Review (NSR)

The proposed control measure which eliminates the existing NSR threshold limits and the "free

market" offsets and requires that all emission increases be mitigated by allotments through a new source siting allowance has the potential to slow or halt new development and/or expansion within the Harbor. If this regulation is adopted, the Port's development plans, including relocation of our hazardous liquid bulk terminals to a remote location, could be significantly affected. Further analysis of the impacts of the control measure should be addressed prior to implementing such a regulation.

Additionally, our comments on the above reference documents are as follows:

FEIR Page 4-14-4, Transportation Tier I and II

The Final EIR mentions the electrification of rail and ship berthing facilities as a proposed control strategy in the AQMP. The Harbor Department has serious concerns regarding the proposed control strategy of electrifying ship berthing facilities along with its implementation schedule (1989). The discussions of impacts only address electrification of rail. The impacts of electrification of ship berthing facilities should also be addressed, as well as alternative strategies to reduce vessel emission.

Impacts to the Harbor Department from this proposed study are centered around four primary issues. If implemented, the rule would likely put the Harbor Department at a competitive disadvantage with other West Coast ports which would have less stringent requirements. This rule, if adopted, would only affect the two San Pedro Bay Ports. The second issue involves the cost to the shippers to retrofit vessels which call on the Port as well as the Port's cost to modify the berths as a result of the electrical requirements. Preliminary investigations suggest an enormous cost for the retrofits, berth modifications, and new electrical systems that must be constructed. The third issue involves a potential conflict with safety requirements of the U.S. Coast Guard. The Coast Guard requires that a vessel have the capacity to leave a berth within 30 minutes in the event of an emergency. With the vessels hooked to shore power via massive electric cables, the ability to leave the berth in a emergency would be virtually impossible. The fourth issue is the potential jurisdictional conflict with foreign flag ships and the ability of the Port to enforce such a regulation.

FEIR, 4-18-24, Economic Impacts, Ship Berthing Facilities

As mentioned previously, preliminary investigations suggest an enormous cost for the retrofits, berth modifications, and new electrical system construction. The FEIR offers no mitigations for these costs. Possible mitigations should be addressed. The Harbor Department feels that other alternatives such as ship fuel conditioners and exhaust gas treatment systems should be investigated as well as determining the effectiveness of air benefits vs costs of Cold Ironing before such a control measure proceeds. The Harbor Department is currently participating in a joint study with SCAQMD, POLB, and Western Oil and Gas Association (WOGA) to address these concerns related to electrification of ship berthing facilities. As part of the study, other strategies that could reduce NOx ship emissions are being analyzed. These alternatives should be incorporated into the AQMP and analyzed as part of the EIR process.

SCAG, DRAFT APPENDIX IV-G, CONFORMITY CHAPTER

The entire procedure for "Determining Conformity with the AQMP" is vague. It is difficult to

B-1

Your statement that emission regulation would put the Harbor Department at a competitive disadvantage with other West Coast ports is true. Since some areas do not have as great a need for emissions reduction as the Basin does, these other ports could have a slight cost advantage since they would not need to add emission controls. As you are aware, the Ship Emission Control Study which is being funded by the Harbor Department, the District, the Port of Long Beach, and WSPA is investigating NO_x control measures for ships. If cold iron is found not to be the best type of control (cost-effective and/or safety reasons) for some types of ships, then other alternative controls will be proposed. The District will work with the Ports and the United States Coast Guard to ensure that all safety concerns are resolved. However, currently some ships already use cold ironing without any safety problems. The Ship Emission Control Study is addressing this issue. The District legal counsel has reviewed potential jurisdictional conflict between foreign flag ships and the port's ability to enforce such a regulation and has determined this rule can legally be developed, adopted, and implemented. These issues are being fully considered in the rule development process.

B-2

Cost Mitigation measures are not required under District CEQA Guidelines (see section 91.1 [a]). However, possible consideration could be given to incorporating cold ironing construction during port expansion/reconstruction. The electric utilities may also give price discounts for bulk power users and/or off peak power users. The District agrees that other emission alternatives are being considered in the Ship Emission Study currently underway and will be used in rule development. These alternatives and other issues will be addressed during the rule preparation process.

000497

review without clearer definition of the thresholds, criteria, and sanctions. Some issues of concern are listed below:

- 1) How will SCAG and SCAQMD conduct the monitoring and reporting program?
- 2) How/Who will determine which sanctions are appropriate and when these sanctions will be imposed?
- 3) Since much of the conformity is based upon forecast and projections given in the 1988 AQMP, how realistic are these?
- 4) What impact will the conformity review have on the processing time of the Environmental documents (through State Clearinghouse, SCAG, etc.), particularly as it relates to the mandatory time lines established by AB 884?
- 5) Since projections and inventories are not specific, how can one tell if a site specific projects conforms?
- 6) What will be the impacts to local governments in terms of manpower and costs with regard to the issue of conformity?
- 7) Refer to Table IV-2 (A-95 Clearinghouse Handbook)
 - a) What is the threshold particularly for storage facilities -one tank, two tanks,etc. (Item 13)?
 - b) It is unclear whether the one million ton increase with regard to water ports, is per facility or total cumulative increase of all facilities (Item 16)? If it is cumulative, how would this be determined?



City of Baldwin Park
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13403 EAST PACIFIC AVENUE • BALDWIN PARK, CALIFORNIA 91706
TELEPHONE 960 4011

**RESPONSES TO COMMENTS
CITY OF BALDWIN PARK (12/16/88)
COMMENT LETTER C**

December 16, 1988

Board of Directors
South Coast Air Quality Management District
9150 Flair Drive
El Monte, California 91731

RE: Air Quality Management Plan

Dear Members of the Board:

C-1 In my capacity as Mayor of the City of Baldwin Park and on behalf of my constituents in that San Gabriel Valley city, I wish to offer my concurrence with the requests from the Southern California Association of Governments, the Los Angeles Division of the League of California Cities and the cities of Orange County for a delay in any action on the proposed Air Quality Management Plan and for additional public comment on the plan, specifically on its environmental and economic impacts.

Residents of Baldwin Park and the other cities in our region know perhaps more than most Southern Californians, the terrible toll which air pollution places upon our people and our environment. Certainly timely action on an effective plan to combat this pollution is needed as soon as possible and implementation should be one of our highest priorities. But the importance of the plan only heightens the need for the plan and its impacts to be thoroughly reviewed so that our collective commitment and cooperation is assured when that plan is put into action. In addition, the cities of our area have not had representation on the South Coast Air Quality Management District's Board of Directors for some time. The League Selection Committee will be meeting on January 5, 1988 and this representation problem will hopefully be rectified at that time. I believe that this is one more reason why action on the plan, which will have tremendous impacts on cities, should be delayed.

C-1

Your comment is noted. CEQA Section 15087 (c) permits public review periods ranging from 30 to 90 days with a standard 45-day public review period for most documents. The AQMP EIR comment period has been extended and has been available for comment a total of 104 days. The dates are as follows:

- a) September 12, 1988 to October 27, 1988 -- Initial 45-day review of the Draft AQMP EIR
- b) December 2, 1988 to December 16, 1988 -- 14-day review period for the December EIR
- c) December 19, 1988 to February 1, 1989 -- 45-day review for the December EIR

The public review and comment period for the AQMP EIR exceeds that required and allowed by CEQA and CEQA Guidelines.


000499

AQMD
12/16/88
Page Two

My office did not receive a copy of the modifications to the Draft Air Quality Management Plan until December 5, 1988. Just these modifications, as you know, represent a large volume of information to be digested. The ultimate adoption of the measures contained in the plan represent matters of the greatest importance to my constituents. I would ask that a six month extension be granted prior to action on the plan's adoption and that extensive public education and communication efforts be implemented during this time to assure adequate input into the plan. I feel an additional period for review is absolutely necessary if the people of Southern California are to understand and accept the sacrifices which will be necessary for clean and healthy air.

Thank you for your concern and consideration.

Sincerely,


Leo King
Mayor
City of Baldwin Park

000500

JAN 31 1989

RESPONSES TO COMMENTS
ETHNIC COALITION (1/27/89)
COMMENT LETTER D

January 27, 1989

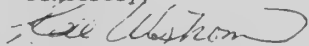
Suzanne Reed
Special Projects Coordinator
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Dear Ms. Reed

Attached are two copies of a written statement that The Ethnic Coalition would like presented at the March 17, 1989 public hearing on the Final Air Quality Management Plan and EIR.

I would appreciate notification of the time and place of the hearing. Let me know if you have any questions. Thank you.

Sincerely,



The Ethnic Coalition
Rae Wishom, Member
3735 W 59th Street
Los Angeles, CA 90043
(213) 977-1978

(Responses to comments begin on a following page)

000501

STATEMENT GIVEN TO THE AIR QUALITY MANAGEMENT DISTRICT TO
CONSIDER ADOPTION OF THE FINAL AIR QUALITY MANAGEMENT PLAN
PUBLIC HEARING

March 17, 1989

The Ethnic Coalition represents minorities in the Southern California basin who are concerned that responsible growth be reflected throughout the region. We first raised our concerns at the AQMD Hearing in Los Angeles in October 1988. At that time we pointed out that without an analysis of the socio/economic impact of the Plan, and specifically a review of areas which appear to affect minorities the greatest, it would be impossible to make a complete evaluation. Since that time SCAG has, through the Planning Institute at USC, compiled a report addressing some --but by their own admission-- not all of our concerns.

The Ethnic Coalition thinks that the need for the AQMP and the various other environmental control plans are critical to the lives of all the residents of Southern California. The issue is not whether or not these controls are necessary but that they be implemented in a manner which does not isolate and penalize any one group. The USC report admits that there is no correlation between the costs of controls applied and the benefits upon any one area. In fact just the opposite occurs since the burden of control is not equally applied throughout the region. It is possible to

D-1

The District Board authorized a major study of public health benefits in the Fall of 1988. The results of this work, in addition to the development of a socioeconometric model (please refer to the response for comment G-157), will ensure that the District's rulemaking process will include an analysis of these issues.

000502

have an individual in Riverside benefit greatly from the burden carried by an inner city resident, who may see only minimal benefits. While this imbalance is highlighted as an area of controversy in the EIR, no further mention is made as to what steps will be taken to ameliorate the problem. The Ethnic Coalition wants the AQMD to make the effort to find out.

Additionally, the report states that the critical issue of implementing the Jobs/Housing Balance program could not be evaluated except for some basic preliminary financial modeling due to the shortness of time. The Ethnic Coalition wants the AQMD to take the time.

What the AQMD Board decides today will affect millions of people for years to come. Public policy implications, social impacts and growth redistribution decisions must have the comprehensive review and input from those communities and groups who will have to live with your decision. Regional decision making without the input and meaningful participation of those affected regional residents is irresponsible. The AQMP, the Growth Management Plan and the Regional Mobility Plan must not be accepted unconditionally without fully understanding the ramifications of implementation. The Ethnic Coalition requests that the task forces proposed by the AQMD be approved and charged with

D-2 Please see Attachment 8 on mitigation measures.

D-3 The detailed impacts of individual control measures will be addressed during the implementation process. Implementation of the tactics identified in the Plan will only occur after a regulation is adopted pursuant to authority granted to the District or ordinances enacted by local governments. The EIR for the AQMP is intended to serve as a base document within the tiered system.

D-4 The District and SCAG are committed to the establishment of two major regional Task Forces: Growth Management/Transportation and Socio/Economic Impacts. Each Task Force will be comprised of a balanced representation from government, industry, and citizen groups. The Ethnic Coalition will be invited to participate in this process. The Growth Management/Transportation Task Force will be charged with developing implementation strategies for a number of the growth management and transportation measures. The Socio/Economic Task Force will review: the public health study and the socioeconomic model for District rules (please refer to responses for comment D-1 and comment G-157). Specific recommendations on Plan revisions will be reported to the District Board and to SCAG's Executive Committee.

000503

D-4
cont

evaluating and recommending implementation control
guidelines.

Further, it is a point of concern with The Ethnic Coalition that not one member of the AQMD Board is a minority or ethnically representative of the population for which they oversee. Los Angeles County is approaching a population of over 60% minority yet not one minority has a Board appointment. The Ethnic Coalition would like to work with the AQMD and the the appropriate State offices in identifying potential minority persons who are interested and willing to work with the AQMD toward our mutual goals. The Ethnic Coalition is prepared to submit the names of interested individuals representing the ethnic diversity whose professional areas of interest and background would serve well as either district or task force members.

Thank You.

The Ethnic Coalition

Rae Wishom, Member
3735 W. 59th Street
Los Angeles, CA 90043

000504

TRI ETHNIC COALITION
(TEC)

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000505

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000506

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Executive Director
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Los Angeles, CA 90012

805000



City of Tustin

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URSULA E. KENNEDY, Mayor Pro Tem
RICHARD B. EDGAR, Council Member
JOHN KELLY, Council Member
EARL J. PRESCOTT, Council Member

WILLIAM A. HUSTON, City Manager

December 15, 1988

Ms. Sharon Reed
Special Projects Coordinator
South Coast Air Quality Management District
9150 Flair Drive
El Monte, California 91731

SUBJECT: COMMENTS ON DRAFT AIR QUALITY MANAGEMENT PLAN

Dear Ms. Reed:

E-1

This letter is in response to reviewing the 1988 Draft Air Quality Management Plan, its accompanying EIR and the proposed revisions to each of these documents. While it is quite clear that the Governing Board of the South Coast Air Quality Management District intends to adopt the Plan and EIR despite all of the local and county agency opposition, the City of Tustin wishes to request an extended review period and that additional information be provided to address the issues discussed herein. In light of the recent legal issues brought to the media from your counsel, when can we expect to hear word on the revised action plan?

E-2

In review of the response to comments on the EIR it was evident that many of the issues related to fiscal impact, socio-economic impacts and implementation measures are being deferred to a later time when rule adoption occurs. While this may be easier to do, it makes for a Plan which is poorly defended. Additionally, without thoughtful consideration of the impacts related to each measure, it will be extremely difficult to gain support for the Plan and could lead to failure to meet the attainment strategies. This is reminiscent of previous attempts to clean up the Basin's air.

It is important to note that everyone agrees that the intent of the Plan is good, but it must be prepared in a fashion which clearly spells out its fiscal and socio-economic impacts as well as provide an implementation and monitoring program. Without these elements, it will be extremely difficult to gain local agency support for the Plan.

**RESPONSES TO COMMENTS
CITY OF TUSTIN 12/15/88
COMMENT LETTER E**

E-1

Your comment is noted. CEQA Section 15087 (c) permits public review periods ranging from 30 to 90 days with a standard 45 day public review period for most documents. To date the AQMP EIR has been available for comment a total of 104 days. The dates are as follows:

- a) September 12, 1988 to October 27, 1988 -- Initial 45-day review of the Draft AQMP EIR
- b) December 2, 1988 to December 16, 1988 -- 14-day review period for the December EIR
- c) December 19, 1988 to February 1, 1989 -- 45-day review for the December EIR

The public review and comment period for the AQMP EIR exceeds that required and allowed by CEQA and CEQA Guidelines.

Also, please refer to the response for E-12.

E-2

Please refer to response for comment 2-5 and 2-12.

000509

December 15, 1988
Mrs. Sharon Reed
Comments on Draft AQMP
Page two

Attached to this letter are two items, Exhibit A is a listing of Tustin's specific comments and concerns on the revised Plan and Exhibit B is a copy of our previously filed comments which were not adequately addressed in the response to comments in the EIR. Prior to any action by the District or SCAG on this issue, the City of Tustin wishes to receive and review your response to our continuing concerns.

Sincerely,



Ursula Kennedy
Mayor

UK:LCK:pef:ts

Attachments

cc: SCAG Chairman

000510

Exhibit A

Comments on Revisions to 1988 AQMP

ENVIRONMENTAL:

1. The response to comments do not address our previous request for an implementation plan for each of the Plan's measures. A detailed analysis of how each of the implementation measures listed in Tier One and Tier Two should be provided.

E-3 The District is in the process of setting up a program to track the progress of the AQMP.

E-3

2. In response to AB3180-Cortese, the EIR should also include a monitoring device to assure compliance with each of the mitigation measures. A monitoring program for the Plan's success in pollution reduction should also be provided or discussed in the Plan.

E-4 Appendix F, distributed with the December, 1988 EIR, contains the economic information from USC. In addition, please refer to the responses for comments 2-36 and 2-33.

E-4

3. The fiscal and socio-economic impacts of each of the measures in all three tiers is not provided, just generally discussed. According to the City's understanding of CEQA and other state laws, these issues have yet to be adequately addressed to meet legal requirements. Since the Plan will become legally enforceable, it is important to provide this discussion so that each of the measures costs and benefits are appropriately considered.

E-5 Please refer to the response to comment 2-21 and to Attachment 1 which provides an expanded discussion of alternatives.

E-5

4. After thoughtful consideration and review of the Plan and EIR it is quite evident in the proposed revisions that the Draft EIR did not contain some of the Plan alternatives and economic information such as the Small Business Owners alternative and the economic information from USC. Under CEQA law, it is the City's understanding that additional review time is needed to consider this information.

E-6 Appendix IV-A suggests modifications, alternatives, and substitutes which can be used in dry cleaning operations, underarm products, domestic products, and etc. For each of these measures, several Proposed Control Methods were provided. Additional technical information will be provided during rule-making or implementation of these control measures.

PLAN MEASURES:

E-6

1. Tier One-Control Measures:
a. The adoption of strict restrictions on the use of solvents, coatings and adhesives is provided as an important attainment measure. Are there adequate substitutes for household and

000611

industrial products that can be used to replace the restricted items? The Plan only eludes to their existence and does not provide any documentation or listing of these replacements.

b. In addition to the comment above, are there replacement products which can be used in dry cleaning operations, underarm products, "domestic products" and other items which are proposed to be restricted?

2. Tier Two-Control Targets:

a. The goals for attaining the use of alternative fuels by certain percentages for each type of vehicle is certainly well intended. However, no specific measures on how to achieve these goals are provided. Are there guaranteed commitments from the automotive industry to meet these goals? If not how can we expect to meet them?

b. As with the Tier One comments listed above, are there existing technology and/or products available to adequately replace the solvents, coatings and adhesives which emit Reactive Organic Gases?

3. Tier Three-Technological Breakthroughs:

a. All of the strategies discussed in this tier are difficult to comprehend, much less implement. Without the security of knowing whether or not these goals can be attained, how can we consider submitting them to the Environmental Protection Agency as measures for meeting the state and federal air quality requirements? Has there been a precedent set by another Air Quality Management District which uses the same strategy?

b. The use of clean fuel vehicles for all of the Basin is certainly a good idea, the question here is whether we can restrict regionalized travel. Since the use of such vehicles would be mandated in this area, how will interstate and interregional travel and commerce be affected? This seems more like a federal implementation measure rather than a regional one and would be very difficult to control.

E-7 We recognize that original equipment manufacturers (OEMS) may not initially produce clean fuel vehicles. However, after-market manufacturers will provide vehicle modifications, such as retrofitting, and clean fuel vehicles. When a large enough sale volume occurs, OEM will then join the market. Electric buses are proven technology and are currently in use at other locations including San Francisco. Demonstration work is in progress for methanol buses. The District will support research and development efforts to provide the required air pollution control technology. If the technology for methanol retrofitting buses is not available by the year 2000, then the emission reduction must be achieved by other measures. Before any rules are adopted, demonstration projects and other analyses to assure satisfactory quality and quantity will be performed.

E-8 More specific information regarding existing technology and/or available replacement products will be provided during rule-making.

E-9 Please refer to the response for comment 2-30.

E-10 Initial requirements will be for fleet vehicles (Rule 1601) which would have dedicated fuel and servicing centers. As these vehicles become more common, these centers will rapidly expand. Outside of the Basin, as more vehicles are produced, the fuel service distribution network would spread nation-wide. Flexible fuel vehicles would have the capacity to use both gasoline and clean fuels within and outside the Basin.

000512

GENERAL COMMENTS:

- E-11 1. The review periods used for this project (Plan and EIR) meet the State's requirements; however, considering the scale, regional impact and technical information and measures proposed in the Plan, it is not feasible for local agencies to respond adequately in the allowed time periods, especially for the revisions to the EIR and Plan. An additional 90 day should be provided for review and consideration of the Plan, EIR and there corresponding revisions.
- E-12 2. Many of the measures require implementation of new technology and/or restrictions on activities or uses which are currently in effect. Will the restrictions and technological changes be applied retroactively, or will existing uses and facilities be grandfathered? For example, will all new and existing drive-thru restaurants be banned, or only new ones? If these requirements are not applied retroactively, is it economically and legally equitable to restrict the rights of businesses and residents who are new to the area? While this grandfathering is common, the measures in the Plan are quite severe and impact a wide range of activities and uses. Some consideration of this issue should be provided.

- E-11 The adoption of the AQMP has been delayed for 90 days (from December to March, 1989) allowing an additional time for review and consideration for all interested parties.
- E-12 All measures would be considered on a case-by-case basis. For example, the control measure for Drive Through Facilities include only the banning of new construction.

BOARD OF SUPERVISORS
COUNTY OF LOS ANGELES
383 HALL OF ADMINISTRATION LOS ANGELES CALIFORNIA 90012

MEMBERS OF THE BOARD
PETER F. SCHABARUM
KENNETH HAHN
EDMUND D. EDELMAN
DEANE DANA
MICHAEL D. ANTONOVICH

RESPONSES TO COMMENTS
BOARD OF SUPERVISORS, COUNTY OF LOS ANGELES (12/14/88)
COMMENT LETTER F

LARRY J. MONTEILH, EXECUTIVE OFFICER
(213) 974-1411

December 14, 1988

James M. Lents, Ph.D., Executive Officer
South Coast Air Quality Management
District
9150 Flair Drive
El Monte, California 91731

Dear Dr. Lents:

F-1

At its meeting held December 13, 1988, on motion of Supervisor Michael D. Antonovich, the Los Angeles County Board of Supervisors requested the South Coast Air Quality Management District to delay approval of the Air Quality Management Plan for 90 days and give consideration to reasonable alternative proposals, which are balanced between the necessity to clean our environment and the imperative that we preserve jobs and continue economic growth.

Enclosed is a copy of the Minute Order detailing this action.

Very truly yours,


LARRY J. MONTEILH
EXECUTIVE OFFICER

LJM-65.L1

Enclosure

F-1

Your comment is noted. Please see the response for comment 9-11.

000514



MINUTES OF THE BOARD OF SUPERVISORS
COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

Larry J. Monteilh, Executive Officer
Clerk of the Board of Supervisors
383 Hall of Administration
Los Angeles, California 90012

At its meeting held December 13, 1988, the Board took the following action:

73

Supervisor Antonovich made the following statement:

F-2

"A shocking report just released by the California Council for Environmental and Economic Balance (CCEEB) predicts that the Air Quality Management Plan (AQMP), which will be considered by the South Coast Air Quality Management District (SCAQMD) on December 16, 1988, will result in the loss of 55,000 jobs in the Southern California basin.

F-3

"The economic impact study concludes that the AQMP will cost basin residents \$14.8 billion annually to implement, which is greater than the total sales tax revenues collected by the State of California. It also suggests that the AQMP 'will be particularly burdensome to the poor.'

F-4

"The Southern California Association of Governments (SCAG), which will consider the AQMP at its December 15, 1988 meeting, has also completed an economic study of Tier I of the three-tier AQMP and its findings are similarly frightening.

"The socioeconomic devastation could be staggering to Southern California if the AQMP is approved as presently proposed. While we must move rapidly to clean up the air, we must proceed prudently to ensure that new measures don't result in massive lay-offs and an unbearable price tag for working people."

(Continued on Page 2)

F-2

The District commissioned its own study of the Plan's socioeconomic impacts. A description of the methodology and results of this study appears in Appendix F of the December, 1988 EIR. Results indicate that the net employment impact of implementing the AQMP would be a gain of 80,200 jobs by the year 2010. Please refer to the response for comment G-157 and to Attachment 10.

F-3

Table 1 of Appendix F to the December, 1988 EIR indicates a net impact of \$5.6 billion in lost output in the year 2010 as a result of implementing Tier I stationary source controls.

F-4

Please refer to Appendix F for a description of the methodology and results of the SCAG study. Also refer to the response for comment G-157 and to Attachment 10.

000515

syn. 73 (Continued)

F-5

Your comment is noted. The District Board has rescheduled consideration of the AQMP for March 17, 1989. Please refer to Attachment 1 which discusses the alternatives to the Plan.

1-5 Therefore, on motion of Supervisor Antonovich, seconded by Supervisor Dana, unanimously carried, the Board requested the Boards of the South Coast Air Quality Management District and the Southern California Association of Governments to delay approval of the Air Quality Management Plan for 90 days, and give consideration to reasonable alternative proposals, which are balanced between the necessity to clean our environment and the imperative that we preserve jobs and continue economic growth.

11213-9.com

Copies distributed:

Each Supervisor
Chief Administrative Officer
County Counsel

Letters sent to:

Executive Officer, South Coast Air Quality Management District
Executive Officer, Southern California Association of Governments



Western States Petroleum Association

February 1, 1989

Dr. James M. Lents, Executive Officer
South Coast Air Quality
Management District
9150 Flair Drive
El Monte, CA 91731

Dear Dr. Lents:

The Western States Petroleum Association (WSPA) appreciates the opportunity to comment on the Draft Air Quality Management Plan (AQMP) prepared by the South Coast Air Quality Management District. We appreciate the work that has gone into the Draft AQMP and hope to continue exploring with the District ways to bring clean air to the South Coast Basin.

This letter and attachments contain our comments on the proposed Draft AQMP and the Final Environmental Impact Report (EIR). The comments supplement those submitted by WSPA's predecessor, the Western Oil and Gas Association (WOGA), dated October 27, 1988 and December 16, 1988. In view of the short time period since the last hearing and the inability of our consultants to obtain from the District all required data to complete an analysis of the District's PM-10 model, WSPA assumes the District will accept future submittals which address these issues in more detail.

In this letter, WSPA emphasizes these six major areas of concern:

1. The Draft AQMP has not been optimized to attain the most efficient and expedient reduction in ambient pollutant concentrations.

WSPA agrees that the goal of attaining National Ambient Air Quality Standards (NAAQS) is one we should all strive toward. However, the pathway to that goal -- the measures needed and their timing -- is critically important. WSPA believes more efficient pathways than the AQMP are available and should be evaluated thoroughly as required by the Clean Air Act and CEQA. For example, other paths, such as the WSPA alternative, can reach the goal of better air quality and improved public health more rapidly and with much less socioeconomic disruption than predicted for the Draft AQMP. Given that other even more efficient options may be documented, the District should seriously consider and evaluate alternative approaches and strategies.

G-1

RESPONSES TO COMMENTS
WSPA 2/1/89
LETTER G

G-1

Please refer to the response to comment A 1-12. The District's thorough review of the WSPA and SCE alternatives is summarized in attachments 1 and 2. The conclusion reached in this review is that even with implementation of all three tiers of the proposed AQMP, the ambient concentrations of ozone will just meet the federal ozone standard (within the margin of modeling error) as will federal PM₁₀ standards, but not State PM₁₀ standards. Therefore, the proposed AQMP must be fully implemented just to reach federal standards and this plan will not result in over control. At the margins of attainment the costs for emissions reductions will be expensive, but will be needed to reach the District's goal of conformance with all ambient air quality standards.

000517

2. Technical uncertainties relating to the District's PM-10 modeling must be resolved.

Several technical uncertainties relating to PM-10 attainment remain. WSPA has defined several areas where the District's PM-10 analyses appear deficient or open to significant technical and scientific criticism. If the underlying data and methodology used by the staff are inaccurate, then the entire PM-10 strategy incorporated within the AQMP may be compromised. These issues should be addressed before District Board action is taken on the Draft AQMP.

These areas are discussed in Attachments A and B.

The District's modeling does not consider the beneficial aspects of NOx and hydrocarbon reductions on ambient PM-10 concentrations.

WSPA has determined that reducing the levels of reactive organic gases (ROG) will lead to significant reductions in ambient pollutant concentrations. While our analysis is ongoing, preliminary data indicate that the WSPA plan:

- o will achieve the National Ambient Air Quality Standards for both NO2 and CO.
- o will result in lower PM-10 concentrations by reducing ambient levels of ROG and NOx (PM-10 precursors).

In WSPA's continuing efforts to ensure the PM-10 standard is achieved, controls on primary and secondary particulates (or their precursors) will be evaluated and incorporated into the WSPA plan. Control measures such as Rule 1109 and other stationary source NOx controls should be implemented in a manner that minimizes potential adverse air quality impacts and maximizes improvements in public health.

Attachments A and B outline our comments in more detail.

G-2

Please refer to appendices A and B to this letter and to Attachments 2 and 3 which provide detailed technical responses to your comment. Please note that this information is already contained in the AQMP and December, 1988 EIR. This information amplifies previously submitted information, but the conclusions drawn in the December, 1988 EIR concerning significance of impacts, mitigation measures and alternatives remain unchanged.

G-3

Please refer to the response for comment G-2.

000518

4. The EIR remains inadequate and does not meet the requirements of the California Environmental Quality Act (CEQA).

G-4 The "Final" EIR circulated by the District in December, 1988 is inadequate in scope, content, and level of detail. We previously submitted a series of comments defining areas of inadequacy. Many of these have still not been addressed in a substantive manner. For example, the EIR has no meaningful discussion or modeling of alternatives to the Draft AQMP, as required by CEQA. Furthermore, the EIR overestimates the benefits and underestimates potential adverse environmental impacts of the Draft AQMP.

G-5 The socioeconomic impacts of the Draft AQMP must be more thoroughly examined. The socioeconomic data (Appendix F) of the EIR documents tremendous costs associated with the District's proposed plan; yet no detailed analyses of alternatives to the proposed plan were evaluated. WSPA believes a complete EIR should assess whether the benefits of cleaner air can be achieved through more cost effective and less socially disruptive approaches.

Detailed comments on the EIR and other legal and regulatory implications are presented in Attachments C and D.

5. Technical feasibility associated with selected stationary source control measures needs to be reviewed and modified.

G-7 WSPA supports many control measures incorporated within Tier I of the AQMP; however, several measures need modification. Some control measures may be too optimistic in projecting potential emissions reductions. For example, the proposed control level may not be achievable on a continuous basis or the baseline emissions inventory may be overstated. Others are not yet adequately defined: they may not have baseline emissions estimates, control technologies may not be available, or further study may be required to determine their emissions reduction potential.

Attachment E details our comments in these areas.

G-4 Please refer to the responses to comments 2-1, 2-4, 2-5, 2-6, 2-7, 2-9, 2-12, 2-13, 2-20, and 2-30. In essence, the December, 1988 EIR and the expanded responses in this Addendum address your concerns. Benefits in the EIR are calculated by comparing the 1987 air quality to the federal air quality standards.

G-5 Please refer to the responses to comments 2-36, to Appendix F, and to attachment 1. A comparative evaluation is provided, but detailed economic data have not been generated because the other alternatives cannot fulfill the project objectives. As required in Section 15126 (c), the "comparative merits of alternatives" are provided in Attachment 1.

G-6 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

G-7 The data used in District forecasts represents the best data available at this planning stage. Please refer to the responses to comments 2-10, 2-12, 2-30, and 20-40.

G-8 Please refer to the response to comment G-7. The proposed AQMP establishes an integrated plan for achieving ambient air quality standards. The concerns raised in your comment are more suitably addressed when control measures are considered for implementation, that is, future tiers. At the plan stage only general consequences of adopting the AQMP can be ascertained. Detailed impact projections will occur when specific actions are defined for specific control measures. As noted in the response to comment 2-30, adjustments in the Plan are expected and provided for in biennial reviews.

000519

6. Relative health effects of ozone and PM-10 should be evaluated prior to District Board action.

G-9

Attainment of clean air within the next 10-20 years is a goal on which WSPA and the District agree. However, within this 20-year "window", alternative strategies for improving ambient air quality in this basin should place initial emphasis on rapid reduction of the more serious pollutants such as ozone. After reducing ozone concentrations to more healthful levels, attention should be turned to other pollutants, such as PM-10, which are not as serious a health problem as ozone but still remain above NAAQS. This approach is consistent with prudent public policy and the Clean Air Act. This strategy would also ensure that Basin residents get the most benefit from the costs of the plan.

Attachment F addresses this issue by reviewing the relative health effects of ozone and PM-10.

To facilitate your review and comment, the following Attachments provide more information on the issues discussed in this letter:

- Attachment A: Systems Applications, Inc.
"Evaluation of Alternative Attainment
Plans for the South Coast Air Basin:
Interim Progress on PM10 Analyses".
- Attachment B: Radian Corporation
"PM-10 Impacts of the SCAQMD AQMP and
WSPA Alternative Plans: Interim Findings,
Interpretations, and Investigations in
Progress".
- Attachment C: ICF Technologies, Inc.
"Comments on the Final Environmental Impact
Report (FEIR) prepared for the SCAQMD Air
Quality Management Plan", January 31, 1989.
- Attachment D: Legal Comments on Behalf of the Western
States Petroleum Association regarding
Proposed 1988 Air Quality Management Plan,
February 1, 1989.

G-9

Please refer to appendices A and B. The District's obligation is not to chose between compliance with one air pollutant or another, but to achieve ambient air quality that meets all public health based standards. This has been explicitly stated by the District. See the AQMP, page ii.

000620

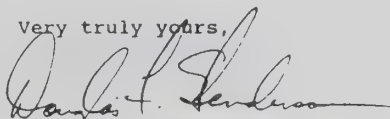
Dr. James Lents
February 1, 1989
Page 5

Attachment E: Technical Comments
"Western States Petroleum Association
Comments on South Coast Air Quality
Management Plan", February 1, 1989.

Attachment F: Environmental Health Service Report
"Health Effects of Respiratory Irritant
Air Pollutants Common in Southern
California: Implications for Regulatory
Priorities", March 1988.

Again, we appreciate the opportunity to submit these
comments to you. Should you have any questions, please contact
me or Mr. Michael Wang, Manager of Operations and Environmental
Issues.

Very truly yours,



Douglas F. Henderson
Executive Director

000521

Attachment C

Comments on the
Final Environmental Impact Report (FEIR)
Prepared for the South Coast Air Quality Management District
Air Quality Management Plan

February 1, 1989

000622

COMMENTS ON THE FINAL ENVIRONMENTAL IMPACT REPORT (FEIR) PREPARED FOR THE
SCAQMD AIR QUALITY MANAGEMENT PLAN

EXECUTIVE SUMMARY

The results of review of the final environmental impact report (FEIR) prepared regarding the SCAQMD Air Quality Management Plan are organized into general and specific comments. General comments summarize our review of the documents and specific comments detail identified concerns regarding specific control measures and the adequacy of impact analysis. Comments on new or modified information presented in the document are indicated with an asterisk(*). A third section provides specific comments on the socioeconomic impact analysis.

There are several points made in this review that we wish to emphasize:

- G-10 • Analysis of alternatives as required under CEQA was provided but the analysis was not equal in terms of rigorousness.
- G-11 • It is unclear in the FEIR whether the emissions associated with changes in control measures (additions or deletions) were modeled to determine their impact on air quality.
- G-12 • It appears the FEIR may still not evaluate the synergistic or antagonistic effects of imposing multiple control measures when evaluating emission reduction potential (and predicting the resulting reductions in ambient pollutant concentrations). If so, the analysis of impacts as presented in the FEIR may be inaccurate.
- G-13 • It is also still not clear from the FEIR whether control measures which induce massive changes in lifestyle (transportation, jobs, housing, population) or measures that must be implemented in cooperation with other jurisdictions (FAA, Coast Guard, state and local governments) can be realistically relied upon to produce the anticipated emission reductions within the required time frame.
- G-14 • Since mobile sources appear to be the dominant contributor to all emission categories in the Basin except particulate matter, we reiterate our support for the implementation of a rigorous vehicle inspection and maintenance program. Such a program would require the full cooperation of the California Air Resources Board.
- G-15 • More emphasis should be given in the document to the public health and safety impacts associated with use of methanol fuel and liquified petroleum gas in mobile and stationary combustion sources.
- G-16 • The analysis presented in the FEIR does not take into account the potential for oxides of nitrogen to scavenge ozone from the atmosphere and that, under certain conditions, imposition of control measures may actually exacerbate existing attainment problems.

- G-10 Refer to Attachments 1 and 2.
- G-11 Please refer to the response for comment 2-11. Modeling included net emissions after additions and reductions.
- G-12 Please refer to the response for comment 2-19.
- G-13 Please refer to the responses for comments 2-10, 2-20, and 2-30.
- G-14 Please refer to the response for comment 2-23 and note that more stringent I & M programs are included in the AQMP (see Table 2-8 of the December, 1988 EIR).
- G-15 Please refer to Attachment G and to the responses to comments 2-8 and 2-46, and sections 4-9 and 4-14 of the December, 1988 EIR.
- G-16 Please refer to the response for comment 2-25.

000523

G-17

- The impact analyses presented in the FEIR regarding electrification control measures do not adequately treat the secondary impacts, particularly those which would occur outside the Basin. Assessment of these impacts is particularly important considering that Tier III electrification strategies would require 46,000 megawatts of new generation capacity.

G-17

Refer to Attachment 5, and to the responses for comments 2-9 and 2-13.

000524

COMMENTS ON THE FINAL ENVIRONMENTAL IMPACT REPORT (FEIR) PREPARED
FOR THE SCAQMD AIR QUALITY MANAGEMENT PLAN

GENERAL COMMENTS

| | | |
|------|----|--|
| G-18 | A. | The alternatives to the proposed project were not modeled, so there is no basis for the conclusion that implementation of these alternatives would not achieve compliance with all federal standards. All proposed alternatives should be evaluated with equal rigor so the District can make a reasoned selection among the alternatives presented (also see specific comments p. 5-8-2).* |
| G-19 | B. | Several new AQMP control measures have been added (e.g., solar water heating for new residential, swimming pool, and commercial hot water), and some have been deleted. It is unclear whether the impacts of the proposed changes were modeled, therefore, it is difficult to evaluate the overall impact of these changes on the proposed AQMP.* |
| G-20 | C. | The FEIR still contains no actual documentation (e.g., modeling results, emissions estimates, etc.). In fact, the only reference to documentation is found in the introduction, which cites a list of appendices. It is impossible to either confirm or refute its conclusions based on an analysis of the raw data. This has limited our ability to provide more constructive comments. In many cases we can do no more than to question the validity of the assumptions on which it appears the District based its conclusions.* |
| G-21 | D. | The overall benefits of the AQMP still appear to be overstated, and its impacts minimized. Specifically, the FEIR does not address the potential negative secondary impacts that are likely to occur as a result of implementation of a variety of proposed control measures. |
| G-22 | E. | Many of the measures presented are not technically feasible within the time constraints for plan implementation (see specific comments regarding p.4-7-6, p.4-9-8). |
| G-23 | F. | The FEIR is overly optimistic in its expectations of what benefits will accrue due to the control measures, how quickly these benefits will accrue, what the economic impacts of the controls will be, what impacts on other media will be, and what kind of substitutions will be made toward less polluting activities (see specific comments regarding p.4-10-1, p.4-12-2, p.4-12-3, p.4-14-1, p.8-1). |
| G-24 | G. | The information presented in the FEIR does not demonstrate that the time frame in which measures are to take effect is reasonable or possible, no matter what public commitment is made (e.g., high speed rail to San Francisco and 20 percent of all passenger vehicles electrically powered in Tier II). Also refer to specific comments regarding p.5-20 |

| | |
|------|---|
| G-18 | Refer to Attachments 1 and 2. |
| G-19 | Please refer to the response for comment G-11. |
| G-20 | Please refer to the responses for comments 1-1 and 2-12. The technical data have been provided in appendices as recommended in the CEQA Guidelines (Section 15147). These appendices have been available to WSPA and the public in general. In addition, at WSPA's request, model runs have been provided for review. |
| G-21 | Please refer to the response for comment G-4. |
| G-22 | Please refer to the responses for comments 2-10, 2-27, 2-28, and 2-30. |
| G-23 | Please refer to the responses for comments G-4 and 2-40. |
| G-24 | Please refer to the response for comment 2-30. |

| | | | | |
|------|----|--|------|---|
| G-25 | H | Many complex socioeconomic impacts are either not adequately factored into the analysis of control measures or are grossly underestimated in the discussion of impacts (see specific comments regarding p.4-11-1) | G-25 | Please refer to the responses for comments 2-33 and 2-36. |
| G-26 | I. | The discussions in the FEIR regarding substitution of fuels, methods, and processes with less polluting means do not adequately address the economic impacts of such substitutions, and more importantly, do not address risk, emissions tradeoffs, or cross-media pollution. In many cases, a control measure substitutes highly concentrated primary emissions from a given source for a less concentrated and less polluting primary source. However, the less polluting source often has significantly greater secondary emissions (e.g., manufacture of retrofit equipment or power generation outside the Basin), thus producing a zero or negative net reduction in pollution, at great cost or other socioeconomic disruption. Please refer to our specific comments for examples of these deficiencies. | G-26 | Please refer to the responses for comments 2-22 and 20-15. |
| G-27 | J. | Many of the benefits attributed to control measures in the FEIR are also provided by other control measures (e.g. freeway capacity and infrastructure enhancements and nonrecurrent congestion control measures). The net effect is a double-counting of the benefits for control measures that impose an increased cost on society, but provide little marginal benefit (also see specific comments regarding, p.4-12-5, p.4-12-12). | G-27 | Benefits are provided in various dimensions. For instance, benefits resulting from fewer damages to health, materials, forest, visibility and agriculture; those from less congestion, etc. These are benefits accrued to various sectors in the local economy. |
| G-28 | K | No quantitative consideration has been given to impacts on hazardous waste disposal capacity in the region due to the residual produced from the implementation and proliferation of pre- and post-combustion desulfurization technology, baghouse and precipitation devices for particulate removal, and post combustion NOx controls (i.e., spent catalysts) (see specific comments regarding p.4-2-9). | G-28 | Please refer to the responses for comments 1-43, 1-45, 2-13, and 2-44. |
| G-29 | L. | The FEIR has not evaluated equally any reasonable alternatives to the AQMP as required by CEQA. Air modeling should be utilized to quantitatively define the difference in impacts among the scenarios, and preferably identify other alternatives that also might show attainment | G-29 | Please refer to the response for comment 2-46. |
| G-30 | M | The impacts on public and worker safety associated with technology-forcing control strategies have not been fully addressed. In addition, use of unproven technology may be inconsistent with the intent of fire or health and safety codes. | G-30 | Please refer to the response for comment 2-25. |
| G-31 | . | The FEIR does not address the potential for oxides of nitrogen to decrease ambient ozone concentrations through the ozone scavenging mechanism (see comments for Section 4-1) | G-31 | Please refer to the response for comment 2-25. |
| G-32 | . | It is unclear why the analysis ignores significant secondary impacts associated with obtaining power from outside the basin (see specific comments regarding p.4-1-36, p.4-7-7, p.4-8-4, p.4-10-1, p.4-14-2) | G-32 | Please refer to the responses for comments 2-9 and 2-13 and to Attachment 5. |

SPECIFIC COMMENTS

CHAPTER 1 - SUMMARY

Economic and Socioeconomic Impacts

- G-33 p.1-3 This section still states that the AQMP will "hasten regional trends", assuming that current trends will continue, only at a faster rate. This assertion is not supported by any analysis in the document, and should either be supported by documentation or eliminated.

Electrification

- G-34 p.1-3 This section states that electricity which cannot be generated in the Basin will be provided by generating facilities located outside the Basin. It does not, however, address the potential ramifications for the out-of-Basin area, nor does it address the ethical aspects of inducing potentially adverse impacts in an area outside the District in order to meet District demands.*

Water Impacts

- G-35 p.1-4 There is no quantitative analysis in the FEIR to support the assertion that water conservation efforts could reduce the impacts of increased demands on the Basin water supply. In fact, given that significant water conservation programs are already in progress in the Basin, it is likely that additional efforts would have minimal additional effect on water demand.*

Energy Impacts

- G-36 p.1-4 There is no quantitative analysis to support the assertion that increased energy demand can be mitigated through conservation measures, load management techniques, and more efficient appliances and processes. It is especially important to substantiate this assertion in light of the impacts that increased energy demand is likely to have on out-of-Basin areas.*

Impacts of Methanol Fuel

- G-37 p.1-4 Although this section states that formaldehyde emissions, produced during methanol combustion, may create health impacts, no quantitative analysis is provided to illustrate the potential magnitude of impact. Additionally, it is important to consider the potential public health impacts of the transport, distribution and use of methanol as an alternate fuel in the Basin.*

Project Benefits

- G-38 p.1-4 There is still not enough information in the FEIR to support the contention that increased crop yields are a significant benefit associated with implementation of the AQMP

G-33 Please refer to the response for comment 2-50 and to Appendix F and Section 4-18 in the December, 1988 EIR.

G-34 Refer to the response for comment G-32.

G-35 Refer to Chapter 4-2, Chapter 3 "Water Demands" in the December, 1988 EIR, and to the response for comment 7-19. Water use and supply is a major issue in the Basin and the small increment required to meet AQMP related demands may contribute to future cumulative significant water demand impacts, depending on a variety of currently unpredictable variables.

G-36 Please refer to the responses for comments 1-25, 1-26, 1-51, 2-145 and 2-146 and to Attachments.

G-37 Refer to the responses for comments 2-8, 2-79, 2-46, and 2-75.

G-38 Please refer to the response for comment 7-21.

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CHAPTER 2 - PROJECT DESCRIPTION

Objectives of The Project

G-39 p 2-4 This section indicates that the FEIR focuses primarily on impacts in the Basin occurring as a result of plan implementation. As noted in other comments provided in the section to follow, although the impact sections have been revised in the FEIR, the document still lacks depth and substance in discussing these impacts and does not evaluate many of the impacts in relation to the economic forces exerted from outside the Basin.

G-40 p. 2-4 The Tier I measures would have significant secondary economic impacts that are not accounted for in the FEIR. Most importantly, some of the control measures will decrease the effectiveness of other measures (gas production controls and methanol fuels), conflict in purpose (SCR and agricultural waste control), and achieve little or no additional benefits while imposing great additional costs and/or producing greater overall emissions (low sulfur fuels).

Emissions Reduction Summary

G-41 p 2-9 The FEIR does contain emission reductions, however, these tables are still not adequately documented and no basis for their use is provided.

Contingency Measures

p 2-26 It appears that the control measures proposed as contingencies may be easier to implement than some of the proposed Tier I and Tier II control measures. It may be desirable, therefore, to substitute some or all of these measures for proposed Tier I or Tier II control measures of lesser benefit prior to adopting a final AQMP.*

CHAPTER 3 - EXISTING AND FORECAST SETTING IN THE BASIN

Oxides of Nitrogen

G-42 p 3-6 This section raises the issue that NO₂ is a precursor to a variety of compounds, including some that can cause serious damage to vegetation and others that have been demonstrated to impair public health. However, the FEIR does not address whether such NO₂ progeny are actually expected to exist in quantities of public health or environmental significance in the Basin, given current or projected ambient concentrations of NO_x. If indeed they would not be expected to occur in significant quantities, then the benefits of NO_x control are less than what is implied in the plan.*

G-39 Please refer to the responses for comments 2-36 and 2-53.

G-40 Refer to Attachment 3 and to the response for comment 2-54.

G-41 Your comment is noted and will be forwarded to the District Board for consideration in making its decision. Please refer to the responses for comments 2-11, 3-45, and 5-5.

G-42 Please refer to the responses for comments 2-4 and 2-25 and to Attachment 3.

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Ozone

- G-43 p.3-11 There is actually a body of scientific literature in support of the assertion of human adaptability to high ozone concentrations. These data indicate that the decrement in lung function abates with repeated exposures. However, there is also evidence that some potentially adverse changes in cell morphology may occur when ozone concentrations reach certain levels. The literature on this dose-response relationship should be evaluated thoroughly to more accurately project the potential public health benefits resulting from ozone abatement.*

Reactive Organic Gases

- G-44 p.3-13 Inasmuch as this section acknowledges that certain hydrocarbon components of ROG emissions are thought or known to be hazardous, it would be valuable to consider targeting specific ROG emissions for reduction, in descending order of hazard, as a project alternative. In such a strategy, control measures would be implemented to reduce emissions of the most reactive and hazardous ROG's first, with additional controls being implemented to reduce emissions of other, lesser hazard ROG's as needed in order to achieve compliance with federal ambient air quality standards. This strategy could achieve the dual goals of maximizing public health benefits and compliance with federal standards.*

Future Air Emissions

- G-45 p.3-14 The assumptions and data presented in these figures (Tables 3-2 and 3-3) are still not adequately documented. It is also not clear the projections account for the possible secondary socioeconomic impacts of the AQMP that are addressed in subsequent comments.

Population Growth Forecasts

- G-46 p.3-11 Factors currently attracting immigrants to the Basin which should have been considered in the FEIR include:
- abundance of job opportunities (immigration would be affected by industrial decline); and
 - impact of new immigration policies on population growth.

Employment and Economics

- G-47 p.3-23 Based on its own description of high wage and low wage jobs, implementation of the AQMP will result in further decline in mid-wage earnings. The measures will eliminate many low wage jobs as well due to the decline of the industrial and manufacturing sector of the economy

- G-43 Please refer to the responses for comments 5-87 and 7-27. It is beyond the District's scope in preparing the AQMP to the health basis of the federal and state ambient air quality standards.
- G-44 Refer to Attachment 1 and 2 and to the responses for comments 2-1, 2-6, 1-12, and 1-15.
- G-45 Please refer to the responses for comments 2-62, G-7, and G-8.
- G-46 Please refer to the response for comment 2-66 and to the projections in the Growth Management Plan and Appendix F.
- G-47 Your comment is noted. Please refer to the response for comment 2-68 and to Appendix F.

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CHAPTER 4 - ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Section 4-1 - Air Quality

Air Quality Benefits of the AQMP

p.4-1-2 It is also true that an increase in oxides of nitrogen (NO_x) emissions can decrease ozone concentrations through an ozone scavenging mechanism. This mechanism was not evaluated in the FEIR. Early implementation of massive NO_x reduction measures may actually hinder ozone attainment efforts.

p.4-1-3 In Table 4-1.1, peak ozone concentrations shown for the 1985 episode day are of much greater importance in terms of health effects than the average concentrations presented in chapters 3 and 4. Yet some of the control measures proposed to mitigate these episodes may be technically infeasible to implement within the required time frame (e.g., coating substitutions, electrification). In those cases, it may be more effective to curtail emissions during peak episodes or during meteorological conditions when episodes are known to occur. More should be spent on improving the predictiveness of models and increased communication systems so that curtailment during episodes can be achieved efficiently.

p.4-1-4 It should be reemphasized that control measure effectiveness in the FEIR is still based for the most part on their ability to reduce maximum hourly concentrations. Curtailment strategies should have been considered as an alternative to technology forcing control measures in that they can achieve the same maximum hourly reductions.

p.4-1-13 In Table 4-1.3, 1985 CO Quality, the number of exceedances seem to be quite localized. Therefore, source control that focuses on location seems particularly important. This aspect was not addressed in the document.

p.4-1-20 In Table 4-1.5, references should be provided.

Transportation System and Land Use

p.4-1-34 In proposing emissions reductions from better drive-through designs, it is surprising that the AQMP and FEIR still include a "non-quantifiable" control measure in Tier I, when it would violate EPA's measure evaluation criteria. In addition, the District claims significant reductions in emissions (70 tons/day of CO, 8 tons/day of NO_x, and 6 tons/day of ROG) and ozone formation from these measures.

p.4-1-35 Maintenance of existing vehicles continues to be ignored as a control measure in FEIR. This measure is both achievable and quantifiable and could be a criteria for registration restriction.

G-48 Please refer to the responses for comments 2-69, 2-70, and 2-71.

G-49 Please refer to the responses for comments 2-73 and 44-6. A time/location control measure (T-8, December AQMP Modifications) addresses this issue.

G-50 This will be corrected in the Final EIR prepared after an AQMP is adopted.

G-51 Please refer to the responses for comments 7-18 and 2-80.

G-52 Please refer to the response for comment 2-81.

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Off-Road Vehicles

- G-53 p.4-1-36 It is still unclear how AQMD intends to regulate jet aircraft that are currently under the control of FAA.

Tier II Control Measures

Transportation Sector

- G-54 p.4-1-34 As stated in previous comments, infrastructure improvements involving highway capacity enhancements and construction of high-occupancy vehicle lanes may encourage increased vehicle use by decreasing traffic impacts. It would not make sense to spend large sums of money on measures that would eventually increase air pollution.

Surface Coating and Solvent Use

- G-55 p.4-1-36 As stated previously in our comments, the practicality of increasing transfer efficiency and substitution of alternative coating techniques depends on what is being coated. Wood coating operations are seriously affected by this measure, yet water based coatings may be infeasible for wood application. Water-borne coating substitutes also have a potentially greater impact on water quality because of their solubility. It is important to remember that the water quality problems in Los Angeles are comparable to our air quality problems. Much of the groundwater in the San Fernando and San Gabriel Valleys is already so contaminated that both valleys are on the National Priorities List of Superfund sites in the U.S. requiring immediate cleanup because of the potential threat to human health and the environment.

Stationary Sources

- G-56 p.4-1-37 In discussion of impacts, the imposition of fees and emission charges are not necessarily technology forcing if technology is not forthcoming. It is more likely that the measures will inhibit industrial and manufacturing activity in general and result in a decrease in jobs and population growth.

Tier III Control Strategy

Future Energy Use in the District

- G-57 p.4-1-36 As stated in previous comments, secondary impact of electrification would be the increase of emissions in areas outside the Basin. It is estimated that this electrification strategy would require 46,000 megawatts of new generation capacity to implement. It is unlikely that other regions would be willing to assume the pollutant burden for our energy needs. Southern California has already been criticized for appropriating the water resources of other regions. This criticism will intensify if we attempt to appropriate air resources as well. It is uncertain whether other communities will provide the regulatory approvals necessary to site these power

G-53 Please refer to the response for comment 2-82.

G-54 Please refer to the response for comment 2-83.

G-55 Please refer to the response for comment 2-84.

G-56 Please refer to the response for comment 2-85.

G-57 Please refer to the response for comment 2-9 and to Attachment 5.

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plants. Energy efficient technologies such as nuclear power or coal combustion may encounter intense public opposition even if district and EPA guidelines are followed. In order to meet this demand for energy, thirty new 1500 MW power plants would have to be sited. Solar and wind energy technologies, while clean in terms of operation, have the following secondary impacts:

- Heat transfer fluids in solar panels can be extremely toxic and would increase hazardous waste generation.
- Solar and wind power generation are both very land-intensive. Solar thermal power facilities generally require one acre of land per megawatt. Meeting Tier III power demand with this technology would require over 70 square miles of land.
- These technologies require tremendous energy to produce the hardware needed to build power generation facilities. The pollutants generated as a result of hardware manufacture is a significant secondary impact. The amount of hardware needed is related to the scale of these facilities (see above).
- Because of the scale required to generate significant amounts of electricity, aesthetics of the area would also be severely impacted.
- Even if these facilities are sited in remote locations such as desert habitat, biological impacts could be major.

Finally, the utility costs and distribution costs are borne by all users of the grid and not just the Basin. These issues should be evaluated in the FEIR even if impacts do not occur within Basin boundaries.

G-58 Please refer to the response for comment 2-88.

G-59 Please refer to the response for comment 2-91.

G-60 Please refer to the response for comment 2-93.

G-58

Section 4-2 - Water Impacts

Growth Management

4-2.2 Although growth rates are assumed in the impact discussion to be equal to what is projected with the baseline, the redistribution of population would put a severe strain on sewage systems near job-rich areas. In addition, it is still not clear in the FEIR how AQMD proposes to counter no- or slow-growth policies to allow high density housing in job-rich areas without tremendous public outcry.

G-59

Further Emission Reductions from Rubber Products Manufacturing

4-2.3 The impact section assumes carbon absorbers are regenerated on-site yet still does not acknowledge the amount of space required and emissions generated during this process would be prohibitive. Treating wastes from carbon adsorption would require facilities to obtain a TSD permit and assume liabilities of closure. The impacts here need to be rethought in light of these factors.

G-60

Phase Out Stationary Source Fuel Oil and Solid Fossil Fuel Use

G-61 p.4-2-6 As stated in previous comments, replacement of all storage tanks and pipes with non-corrosive materials as described in the mitigation section is wasteful if fuel is only used for emergency purposes; engine modifications or replacements are also necessary in order to use different fuels. There are also industrial processes (e.g., rotary kilns for portland cement clinker) which require process temperatures higher than clean fuels such as methanol are able to provide. The activities necessary for replacement of equipment will likely pose greater threats/emissions than the present tanks and pipes themselves. The measure also increases the likelihood of major accidents because the alternative fuels are more dangerous to handle. It is never a good idea to increase the failure rate on an emergency system.

G-61 Refer to Attachment 6 and to the responses for comments 2-97, U-30, U-33, and G-15.

G-62 Please refer to the response for comment 2-98.

G-63 Please refer to the response for comment 2-99.

G-64 Please refer to the responses to comments 2-13, 2-93, and 1-43.

G-65 Please refer to the response for comment 7-24.

Control of Fugitive Emissions From Publicly Owned Treatment Works

G-62 p.4-2-7 As discussed in previous comments, many other stationary source control measures outlined in the AQMP will increase sewer effluent (e.g. fuel gas sweetening and carbon adsorption), yet the District proposes to put restrictions on industrial effluent at the same time. The feasibility of implementing both measures concurrently should be re-evaluated. If pretreatment of wastewater occurs on site and hazardous waste is generated, facilities are subject to TSD permits and the environmental liability associated with that designation. Most facilities would have extreme reluctance to submit to a designation which would trigger closure requirements upon facility shutdown.

Growth Management

G-63 p.4-2-9 In evaluating water reuse as a mitigation measure, it is important to consider that the reuse of water has legal impediments such as distribution/ownership of the water which must be overcome before it can be practical; this aspect was not addressed in the DEIR and FEIR.

Tier I Surface Coating and Solvent Use Control Measures

G-64 p.4-2-10 As discussed in previous comments, disposable carbon units are considered as a mitigation measure if coating reformulation proves ineffective. Disposable units, however, generate hazardous waste and to recommend their use is contrary to the intent of recommendations made regarding regeneration of control devices in other control measures.

Section 4-5 - Noise

Impact

G-65 The statement, "if airport-related traffic is spread over the entire day any resulting increases in noise levels should be minimal".

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implies that one of the anticipated consequences of plan implementation is a change in temporal air traffic patterns. It is likely to be difficult to get the public residing close to airports to accept, for instance, shorter periods of flight curtailments during the nighttime hours. Both the actual adverse impacts of temporal changes in air traffic patterns on the affected public, and the likely difficulty in gaining public acceptance for this measure, should be considered in estimating potential impacts.*

- G-66 Please refer to the response for comment 2-104
- G-67 Please refer to the response for comment 2-83.
- G-68 Please refer to the response for comment 2-106.
- G-69 Please refer to the response for comment 2-107.

Section 4-7 - Land Use

Growth Management

- G-66 p.4-7-4 The discussion in the impact section assumes that it is highly desirable to live near work, however, some people may choose not to live near industrial facilities or commercial districts. We also wish to restate that plan implementation may cause large negative impacts upon the economy that will induce much lower or negative economic growth. The relationship between these forces should be addressed in the analysis (see Section 6-1).

Freeway Capacity Enhancements

- G-67 p.4-7-5 This control measure is still not well described, and it is difficult to analyze whether or not this measure will provide any real benefits. The limitation proposed relies on siting residential areas in close proximity to industrialized areas which may be more of an impact on public health than federal AAQS exceedances.

High Speed Rail

- G-68 No evidence is provided that the technology required for high speed rail, as defined in the FEIR (i.e., achieving speeds of 250 to 300 miles per hour), is available or that construction is possible within the time frame that the plan allows. Even if such a system were available, the FEIR does not realistically address the feasibility of implementing such a project within the requisite timeframe (i.e., implementation goal of 2010) and does not allow time for designing a system, obtaining the necessary financing, or granting of appropriate environmental permits. Therefore, as asserted in our previous comments, this measure is not feasible, and should not be relied upon to provide emission reduction benefits.*

Tier III

Electrification

- G-69 As stated previously, this control measure poses an ethical dilemma in that it would transfer emissions to communities outside the Basin for activities (power generation) that solely benefit the Basin. It is also not clear that non-Basin areas will allow power plants in their communities for the sole purpose of serving Basin users

000534

Section 4-8 - Natural Resources

Land

- G-70 p.4-8-1 As outlined in previous comments, there is already controversy between local jurisdictions regarding land use plans which conflict along city borders. More input on a regional level is needed to coordinate planning. Regional planning influence will be even more important for control measure implementation.

Natural Gas

- G-71 p.4-8-4 The FEIR does not address the secondary impacts associated with methanol production. In evaluating impacts, the District anticipates that methanol demand will be met from outside the Basin, yet processing facilities must be located near the resource to meet cost-effectiveness criteria. Consequently, if in the unlikely event demand for clean fuels is to be met by domestic sources, it will put extra burden on Ventura, Santa Barbara and Kern counties, which are also non-attainment areas. The transfer of these impacts to other non-attainment areas is likely to be unacceptable to EPA.
- p.4-8-4 A major distribution infrastructure must be in place prior to widespread use of methanol. This infrastructure would include pipelines, storage tanks, unloading facilities at major ports, and other pumping and support systems. The impacts associated with the construction and operation of these systems are still not adequately addressed in the FEIR.

Renewable Energy Resources

- G-72 p.4-8-4 Additional potential impacts resulting from using working fluids other than water are associated with the manufacture, handling, and transport of such fluids. These impacts should be evaluated in the FEIR.
- G-73 p.4-8-5 In the evaluation of mitigation for this control measure, it is acknowledged in the FEIR that the measure has the potential to force manufacturers out of business. Yet one of the basic assumptions in the socio-economic analysis is that no businesses will close, prices will just rise. The impacts of all control measures should be reevaluated to account for business closures.
- G-74 p.4-8-6 Although a certification program for "contractors and installed equipment" may mitigate the potential for equipment failure resulting from improper installation, it will not mitigate the potential for failure resulting from unreliable equipment or improper equipment maintenance. In addition, this program will not mitigate the potential impacts of the manufacture, handling, and transport of non-water working fluids.*

G-70 Please refer to the response for comment 2-109

G-71 Please refer to the responses for comments 1-60 and 2-111.

G-72 Please refer to the responses for comments 2-46 and 2-88.

G-73 The socioeconomic forecast by the District indicates that no business closures should occur. The EIR recognizes that the potential for closures cannot be excluded at this time. Hence, mitigation is provided to address this problem should it occur.

G-74 Your comment is correct. All businesses handling hazardous toxic materials face these risks and mitigation is achieved through adoption and implementation of contingency plans to deal with accidents and equipment failures.

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Section 4-9 - Risk Of Upset

Add-On Control Equipment

- G-75 p.4-9-1 As requested in previous comments, information should be provided in the mitigation section as to how the District will ensure that inspection, monitoring, and good housekeeping is accomplished.

(Same comment for Vapor Recovery Systems, p.4-9-2.)

Selective Catalytic Reduction

- G-76 p.4-9-3 The impact section still does not provide an analysis of the potential for the release of ammonia associated with this technology.

Alternative Fuel Technology

Methanol

- p.4-9-5 The mitigation section describes the protective equipment used to handle methanol such as, impervious clothing, gloves, face shields and other equipment such as respirators. We are concerned about what public perception will be if these clothes are donned to dispense clean fuels at gasoline stations. Service station users who "self serve" would face significant risk of exposure without the protective equipment. The risk of casual exposure at home (i.e., fuel tank leak in enclosed garage) should also be considered. These issues are still not addressed in the FEIR. A more in depth analysis of public risk is required for this measure.
- G-77 p.4-9-5 As stated previously, additional fire protection equipment and facilities will be required since current techniques and equipment used for petroleum storage and handling are not effective with methanol.
- p.4-9-5 The evaluation of the relative impact of methanol and gasoline is weak; acute exposure to methanol poses a substantially greater threat to public health than does exposure to gasoline. The mitigation section also implies that due to the corrosive nature of methanol, the potential for accidental release and consequential acute exposure is increased. This impact should be evaluated.

Alternative Fuel Technologies

Liquidified Petroleum Gas (Propane)

- G-78 p.4-9-7 The section on environmental setting does not describe clearly which specific mobile or stationary sources are expected to use LPG as an alternative fuel. If it is being proposed for wide public use, then there are certainly additional safety impacts which must be addressed. Also, the statement that certain of LPG's properties make it a candidate for indoor use may be inconsistent with ANSI

G-75 Refer to Attachment 8 and to the response for comment 2-115.

G-76 Please refer to the responses for comments 2-13, 2-46, and G-74. The potential for adverse impact from ammonia releases will be evaluated for each site and appropriate engineering measures and response capabilities will have to be implemented at each location.

G-77 Refer to Attachment 6 and to the responses for comments 2-117, 2-118 and 2-119.

G-78 LPG is proposed as an alternate fuel both uses. Responses to comments 2-13, 2-46, 2-113, G-61, G-71 and G-74 apply to this comment.

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- requirements for hooded ventilation, safety showers, respiratory devices and rescue harnesses at locations having LPG installations.
- G-79 p.4-9-7 If LPG is proposed as a wide use alternative fuel, then the potential impacts of minor vehicle collisions must be considered. Additionally, the feasibility of retrofitting service stations and perhaps even residential garages with requisite ventilation systems and safety equipment must be evaluated.
- p.4-9-7 The mitigation section describes NIOSH, DOT and OSHA requirements for protective clothing during LPG handling, which include use of goggles and gauntlet gloves. As with methanol, we are concerned about what the public perception will be if this equipment is donned to dispense clean fuels at service stations. Service Station users who "self serve", would face significant risk of exposure without the protective equipment. The safety hazard and the risk of exposure at home (i.e., fuel tank leak in an enclosed garage) should also be considered. A more in depth analysis of the risk to public health and safety is necessary for this measure.*

Reformulation of Solvents and Coatings

- G-80 p.4-9-8 The assessment of impacts in this section of the FEIR is still confusing. The measure advocates use of more toxic compounds such as methylene chloride, but the section acknowledges that if the compounds are regulated as toxic they cannot be used. The use of dichlorodifluoromethane is also suggested, but the analysis indicates that the District prohibits substitution of compounds that would lead to depletion of the ozone layer. The conclusion the reader reaches is that solvent and coating use in the basin is essentially prohibited. This section is still contradictory and should be reanalyzed.

Section 4-10 - Population

Alternative Work Schedules and Locations

- G-81 p.4-10-1 As noted in previous comments in section 4.7, the premises on which the projected benefits of these control measures are based are questionable and not adequately supported or documented in the plan or background documents. In Tier I, the plan projects adoption of alternative work schedules or locations and telecommuting practices that involve 40 percent of the work force. Not only are inadequate mechanisms provided for achieving this shift in work style, but no basis is provided for the assumption that 40 percent of the work force is affected. It is still unclear whether there is any relationship between this figure and the projected reductions in emissions. If there is no relationship, the benefits are likely to be overstated. The projection appears to relate to gross benefits only, and does not account for the secondary impacts of other measures (e.g., freeway capacity enhancements) that would induce some residents and employees to maintain their current work schedules, locations, or practices.

- G-79 LPG is already used extensively in remote areas and does not pose any unusual management problems. Specific mitigation measures will be included if and when this measure is considered for implementation.
- G-80 Please refer to the response for comment 2-122.
- G-81 Please refer to the response for comment 2-123.

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G-82

p.4-10-1 The FEIR admits that the potential magnitude of population relocation is not known at this time, because it depends upon the actual number of affected workers, availability and cost of housing, socioeconomic factors, and other individual preferences and trade-offs. The missing information is pivotal in assessing the impacts of such an approach. It is inconsistent to project a 40 percent impact on the work force while admitting that the necessary information is not available.

G-82

Please refer to the response for comment 2-124.

G-83

Please refer to the response for comment 2-125 and 2-126.

G-84

Please refer to the response for comment 2-127.

Mode Shift Measures

p.4-10-2 As stated in previous comments, mode shift measures can be effective in reducing emissions while educating the public regarding the need for changes in personal travel methods. As noted elsewhere, other measures (such as freeway capacity enhancement) that make driving easier or increase road capacity may decrease emissions in the short term, but increase the incentive for others to continue their inefficient driving patterns, thus working against this goal.

G-83

p.4-10-2 In the impact section, it should be noted that people commute long distances because they cannot afford housing adjacent to work. Aside from moving businesses to lower income areas, the only other alternative would be to rezone single family residential areas to multiple dwelling areas, a move that would be vehemently opposed in existing residential neighborhoods.

Growth Management

p.4-10-3 The FEIR indicates that many of the intervening mechanisms necessary to influence population are beyond the District's authority for reasons of either a biological or political nature, and that politically feasible controls would need to be implemented through voluntary local government action. The mechanisms that are beyond the District's authority, however, may not be in the best self-interest of the local government authorities, and are therefore, not likely to be implemented without significant incentives to do so. Such incentives are still not described in the plan or in the FEIR. For many local authorities the actions necessary under the control measure would undermine their tax base and local economy by massively re-zoning their communities to achieve the "balance" of jobs and housing. Since the benefits in reduced emissions would accrue to the region as a whole, the community would realize only a fraction of their economic losses through emissions reductions. It is not expected, therefore, that a local authority would take such action of their own accord, and certainly not without a substantial transfer of discounted future earnings (tax credit) from the other areas of the Basin that would benefit from their altruism. Importantly, since implementation of growth management measures is voluntary, the projected benefits utilized in the FEIR for these measures may not be realized.

G-84

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| <u>Capacity Enhancements</u> | |
| G-85 | p.4-10-7 As stated previously, expansion in freeway capacity only exacerbates an existing problem. Rezoning expensive residential areas will be vehemently opposed by existing residents. |
| <u>Section 4-11 - Housing Impacts</u> | |
| <u>Growth Management</u> | |
| G-86 | p.4-11-1 As discussed in previous comments, the growth projections used in AQMP do not account for loss of jobs associated with cost prohibitive control measures. It should be acknowledged in the impact section that job loss, particularly in the low income industrial/manufacturing sections, may self limit population growth and housing impacts. |
| <u>Energy Conservation Pricing, Tax and Subsidy Incentives</u> | |
| G-87 | p.4-11-5 As stated in previous comments, we support realistic energy conservation measures that will reduce emissions. However, implementation of these measures will require state support in the form of ballot measures or legislative action. It is uncertain that the rest of California is willing to conserve energy in order to improve air quality in the Basin. |
| <u>Section 4-12 - Transportation</u> | |
| <u>Tier I Measures</u> | |
| <u>Limitations on Vehicle Registration</u> | |
| | p.4-12-2 Limitations on registration would be effective in reducing localized Basin vehicle traffic. However, as stated in previous comments, support for this measure will be difficult to generate, and consequently, the measure will be difficult to implement. The benefits expected to accrue from this control measure, therefore, may not occur. |
| G-88 | p.4-12-2 Such a measure also poses several important questions concerning the type of implementation mechanism to be used. Setting higher registration fees would be preferable to subjective selection of registration "caps" for reasons of economic efficiency, but would redistribute driving rights from the poor to the affluent. Some form of lottery, therefore, may be useful in correcting equity impacts, but may grant registration rights to people who will use them only periodically, denying those rights to individuals who have a greater need. These issues must be carefully explored in devising a system that will be effective, yet equitable. |

G-85 Please refer to the response for comment 2-128.

G-86 Please refer to the response for comment 2-129.

G-87 Please refer to the response for comment 35-1 and 2-130.

G-88 Please refer to the response for comment 2-131 and 7-17.

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| <u>Alternative Work Schedules and Locations</u> | | |
| G-89 | p 4-12-3 As noted in previous comments, it is unclear what the projected benefits from this control measure are based on, and these benefits are likely to be grossly overstated. | G-89 Please refer to the response for comment 2-133. |
| <u>Mode Shift Measures</u> | | |
| G-90 | p 4-12-5 The types of inducements outlined in this section are reasonable and should be effective. However, as stated previously, measures that will increase freeway capacity will work against these goals and make such efforts difficult. The attention that this section gives to employee resistance to mode shifts and the incentives necessary for inducement are well-recognized. More attention should be given under all control measures to resistance by affected parties and recommended incentives for inducing the desired actions. | G-90 Please refer to the response for comment 2-134. G-91 Please refer to the response for comment 2-135. G-92 Please refer to responses to comments 2-136 and 2-137. G-93 Please refer to the response for comment 2-138. |
| <u>Employee Ridesharing and Transit Incentives</u> | | |
| G-91 | p 4-12-5 In the evaluation of Employee Ridesharing and Transit Incentive Programs, trip reduction programs for employers of 25 or more persons still do not include exceptions for services that by the nature of the work require that employees work irregular hours, or must travel during the day in their personal cars; such as doctors, lawyers, or sales personnel. Otherwise, this measure puts undue burden on certain economic sectors, especially sales or service occupations that require travel as part of daily responsibilities. | |
| <u>Nonrecurrent Congestion</u> | | |
| G-92 | p 4-12-12 If nonrecurrent congestion (due to traffic accidents, obstacles, distractions) accounts for 50 percent of the congestion in the Basin, then as the plan notes, removal of as many of these obstacles and distractions as possible will make great gains in decreasing the vehicular hours traveled. This measure and other efficiency-based control measures should be implemented in the near term. As stated in previous comments, the benefits should be analyzed and incorporated into the model prior to projecting the benefits of further control measures. Such an approach would eliminate other measures that are either redundant or that do not produce benefits over and above those already captured by other measures | |
| <u>Freeway Capacity Enhancements</u> | | |
| G-93 | p 4-12-16 HOV lanes are necessary for existing freeways, but whether they should be provided in addition to current capacity or whether portions of current capacity should be replaced is still open to question. This section of the FEIR asserts that vehicular miles and hours traveled would both be decreased with capacity enhancements, but that total number of trips would remain the same. Whenever freeway capacity in areas of large demand is increased either through increased physical capacity or increased efficiency volume increases to absorb the excess. Additions in capacity that would decrease VMTs would also provide the incentive for that capacity to | |

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be absorbed, inducing employees and residents, on the margin, who currently do not drive (or use alternate modes of transportation), to drive instead. The benefits associated with measures which enhance existing capacity should be more fully analyzed in the FEIR.

Railroad Electrification

p.4-12-17 (See previous comments on impacts of electrification.)

Tier III Measures

p.4-12-21 (See previous comments on impacts of electrification.)

Section 4-13 - Public Services

Fire and Police Protection

Control of Emissions from OCS Exploration Development and Production

p.4-13-2 It is still unclear how the discussions in this section regarding hazardous waste generation relate to impacts on fire and police protection. The issue of concern with regard to fire protection is the increased fire hazard on offshore platforms associated with the use of alternative fuels. It is clear that the District has no jurisdiction over these sources and it is unlikely that the Coast Guard or the Minerals Management Service will support a measure with potential for creating industrial accidents.

Residential and Public Sectors

Control of Fugitive Emissions from Publicly Owned Treatment Works

p.4-13-3 Waste minimization, the measure proposed in the mitigation section to reduce the hazardous waste generated by more stringent POTW standards, is already required by law. It is also favored by most firms because of the reduction in disposal costs. Therefore, increased waste minimization efforts are unlikely. As stated in previous comments, a more likely scenario is that more pretreatment will be required on-site, which will generate more hazardous waste and push many firms into the TSD facility permit arena. Therefore, increased hazardous waste generation is an unavoidable adverse impact.

Others

Agricultural Processes - Control of Emissions from Livestock Wastes

p.4-13-5 As stated in previous comments, livestock waste cannot be used for energy generating purposes without generating air emissions

G-94 Please refer to the response for comment 2-139.

G-95 Please refer to the response for comment 2-140.

G-96 Please refer to the response for comment 2-141.

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Schools

Growth Management

G-97

- p. 4-13-6 In the impact section, it is stated that more families would live in the urban core of the Basin than would have otherwise been projected without AQMP growth management strategies. Siting of new schools in industrial areas may require extensive site investigation and remediation if land donations from developers include property previously used for industrial purposes.

G-97

Please refer to the response for comment 2-142.

G-98

Please refer to the response for comment 2-143.

G-99

Please refer to Attachment 5 and to the responses for comments 2-144, 2-145, 2-146, 2-147 and 2-148.

District Impacts

G-98

- P. 4-13-7 In the impact section, more information is still not provided as to the magnitude of staff and equipment that would be required to research, develop, and enforce the various rules and regulations implementing the AQMP. Impacts on District resources are expected to be severe and this impact may directly hinder the effectiveness of many of the control measures.

Section 4-14 - Energy

Overall, the estimated benefits in the FEIR associated from conservation, alternative fuels, and electrification are overly optimistic. Little evidence is provided in the plan or in background documents to support these claims.

G-99

- p.4-14-1 As stated in our previous comments, the energy strategies in the FEIR rely heavily upon electrification as a source of energy and discontinuation of fossil fuels. While the section notes that this strategy will force Basin residents and businesses to rely on out-of-Basin power sources, the section does not address the possible impacts associated with this energy dependence. This issue is not given emphasis in the FEIR.
- p. 4-14-2 The FEIR admits that electricity that cannot be generated in the Basin by non-polluting sources will be purchased outside the Basin, but still does not consider the economic impacts of such a measure (e.g., increased operating costs, availability of power outside basin). This measure could be extremely costly, with significant impacts upon business activity, economic growth, and the cost of living. The FEIR does not address these concerns.
- p. 4-14-2 As noted, this control measure presents an ethical planning dilemma in that the increased demand for electric power by the Basin will require new generation sources out of the Basin that will likely use fossil fuels. The FEIR continues to ignore the fact that this plan places the impacts of energy resource depletion and air quality deterioration upon the communities outside of the Basin.

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Industrial Energy Use

Electrification of Industrial Processes

- G-100 p.4-14-2 The mitigation section suggests that greater coordination among a variety of interests will ensure that additional generating capacity is added to permit timely implementation of the electrification strategy. However, it provides no data to support this assertion.*

Industrial Energy Use

- G-101 p. 4-14-2 The District proposes that load management techniques be applied in order to mitigate increased demand for electricity. However, the FEIR still fails to note that industrial processes are part of the baseload, not the peak load. An increase in baseload demand makes peak load management more difficult, but managing peak load demand will do nothing to mitigate baseload.

Gas Turbine Power Generation

- G-102 p.4-14-3 Secondary impacts, such as emissions resulting from increased truck and rail travel related to transport of newspaper wastes, will (as the FEIR admits) depend on the effectiveness of mobile source electrification and alternative fuels measures. Although the efficacy of such measures may be difficult to quantify reliably at this time, quantitative analysis should be performed even if only on a basic level to evaluate whether the net effect of the proposed control measure is beneficial.*

Alternative Fuels Program

Oxygenated Fuels

- G-103 p 4-14-7 If neither the significance of the impact nor the adequacy of mitigation techniques can be evaluated for this alternative due to lack of data, it may be premature to include it in the AQMP as a proposed control measure.*

Methanol

- G-104 p 4-14-8 Although not an impact directly related to energy, it should be noted that an additional impact of methanol as an alternative fuel is that it is more difficult to detect than gasoline. Therefore methanol use poses a likelihood of contaminating the environment (e.g., soil, groundwater) through non-detection.*

Natural Gas

- G-105 p. 4-14-9 This section acknowledges that natural gas is not considered to be a long-term resource as an alternative fuel, yet an implication of this measure is that significant capital expenditures would be necessary to construct distribution systems and to reconfigure automobile engines. The impacts of incurring such substantial costs

- G-100 Please refer to the responses for comments G-99, 1-25 and 1-26.
- G-101 Please refer to the response for comment 2-148.
- G-102 Please refer to the response for comment 2-148.
- G-103 The text on page 4-14-7 describes potential impacts to the degree feasible at this time. The potential use of oxygenated fuel may be significant, unless mitigation measures as outlined are effectively implemented with this measure.
- G-104 Refer to Attachment 6 and to the response 2-8.
- G-105 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. If the role of natural gas as a fuel is expanded, additional capital expenditures will have to be made and an economic evaluation of costs will have to demonstrate its viability at the time it is considered for additional uses.

simply to capture a short-term resource appear to render this proposed measure unacceptable.*

Liquified Petroleum Gas (Propane)

- G-106 p.4-14-23 The impacts of minor traffic accidents should be evaluated for this proposed alternative fuel.*

Section 4-15 - Utilities

Electric Utilities

- G-107 p.4-15-1 It is difficult to evaluate the two new tables in this section given that the text does not provide any supporting explanation.*

Section 4-17 - Human Health

- G-108 p.4-17-1 This section should be expanded to include discussion of the impacts of, and mitigation techniques for, acute health effects. Safety-related issues also merit discussion in this section.*

Alternative Fuels Program

- G-109 p.4-17-10 Liquified petroleum gas certainly should be included in the impacts analysis for this program.*

Section 4-18 - Economic Impacts

Introduction

- G-110 p.4-18-1 This section should include a discussion of the assumptions used in developing the information presented in the entire chapter.*
- p.4-18-1 The FEIR does not address the massive impacts that Basin-wide electric conversion will have on the economy. Such a conversion will, inevitably, lead to a loss of jobs and businesses that are operating on the margin. Decreased Basin employment and increased demand for electricity from outside the Basin will induce a net flow of dollars and resources outside of the region, producing the regional equivalent of a massive foreign trade deficit for the Basin.
- p.4-18-1 The FEIR notes that the manufacture of pollution control equipment will be a stimulus to the Basin's economy, but it is likely that the jobs associated with the manufacture of new pollution control equipment will take place outside the Basin due to the stringent controls on manufacturers within District jurisdiction.
- p.4-18-2 There is no economic theory to support the assertions in the fourth and fifth paragraphs. Indeed, the economic impacts of the proposed control measures may be so severe that physical changes in the

- G-106 Please refer to page 4-14-19 of the December, 1988 EIR.
- G-107 Please refer to Attachment 5 and to the response for comment 2-9.
- G-108 Acute health risks are addressed on a case-by-case basis at the time a measure is considered for implementation.
- G-109 It has been. Please refer to pages 4-14-9 through 4-14-24 of the December, 1988 EIR.
- G-110 Please refer to the responses for comments 2-151, 2-152 and 2-153. Different assumptions are used in various sub-selections of Section 4-18. Please refer to Section 4-18 for more details.

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regulated community will occur. In this case, the economic impacts would be significant for the entire Basin.*

Tier I Control Measures

Stationary Sources

p.4-18-6 The overall assumption that control costs may be passed directly on to the consumer is predicated on the Basin functioning in a vacuum. Manufacturer's in the Basin will not be competitive with out-of-Basin counterparts who have no additional costs that must be passed on the consumer. Unless the Basin imposed trade restrictions on goods produced by out-of-Basin industries, pass-through costs may deal a death blow to certain Basin manufacturers.

G-111 p.4-18-6 The second paragraph does acknowledge there may be some costs that may not be passed on to the consumer. This statement appears to be inconsistent with Appendix F, which assumes as the basis for its projections that all control costs are passed on.

p.4-18-6 The statements in the third paragraph appear to be based on the assumption that additional growth will occur in the Basin in response to the area's need for additional equipment, such as control equipment. However, because of the stringency of the AQMP requirements, we believe that such growth is more likely to occur outside of the Basin.*

Agricultural Processes

Pesticide Application

G-112 p.4-18-16 The proposed mitigation strategy outlined in this section is pesticide activity management. If activity management is considered viable in this area, then it should also be considered seriously for other control measures. For instance, it may be more effective to curtail emissions from certain activities during peak episodes/specific meteorological conditions, than to require implementation of process controls that are currently of questionable technological feasibility.*

Transportation and Land Use Measures

G-113 p.4-18-32 In discussing the difficulties in developing the management skills necessary to ensure that tasks are completed under a system where workers telecommute, it is still unclear in the FEIR how the District would influence telecommunication, given their present authority.

Energy Conservation Measures

G-114 p.4-18-39 Has the District engaged lending institutions in dialogue to determine whether energy costs actually may be used as a factor in calculating the amount of a loan? Unless the feasibility of this

- G-111 Please refer to the responses for comments 6-4, 6-30 and 6-33.
- G-112 It is being considered. Please refer to the response for comment G-48.
- G-113 Please refer to the response for comment 2-160.
- G-114 Your comment is noted. A determination regarding the feasibility and effectiveness of such mitigation will be made when the proposed measure is considered for implementation.

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option can be demonstrated, it should not be included as an option for mitigating capital costs.*

Direct and Indirect Impacts

G-115 p.4-18-45 Contrary to the text, Appendix F does not provide a more detailed analysis of these impacts. Indeed, the analysis in Appendix F appears to be preliminary; the impacts it forecasts are indicative what "might" occur upon implementation of the plan.*

CHAPTER 5 - ALTERNATIVES TO THE PROPOSED PROJECT

Introduction

G-116 p.5-1 Not all of the project alternatives were modeled, making it very difficult to evaluate them adequately and come to a reasoned selection. Indeed, from the data at hand, it is difficult to conclude that certain of the sub-alternatives are not capable of achieving full compliance with all federal standards. Modeling should be performed for all project alternatives in order to assess realistically how they compare to the proposed AQMP.*

Partial Implementation Measures

Implementation of Least Cost Measures Only

G-117 p.5-8 If activity management techniques are indeed being considered, then their efficacy certainly should be evaluated prior to adopting the final AQMP. Adoption of activity management techniques as a component of the AQMP could result in significant changes to the cost-benefit scenario developed for the proposed plan.*

CHAPTER 8 - GROWTH INDUCING IMPACTS OF THE AQMP

G-118 p.8-1 This section still briefly addresses how control measures will affect the desirability of the area, while potentially imposing severe economic hardships. This section, however, avoids any analysis of possible scenarios by noting that, "to attempt to determine which [growth inducing/reducing incentive] would be dominant would introduce undue speculation, which is not allowed under the CEQA guidelines." This argument appears weak in that CEQA guidelines were not intended to be used as an rationale for not undertaking analysis. Analysis has not been performed in the FEIR to evaluate the range of impacts on the Basin under reasonable scenarios. Performing such analyses does not necessarily commit the District to undue speculation.

p.8-1 The first "Potentially Positive" Growth-Inducing Impact described in this chapter is the inducement of more people into the area. This text is still in conflict with the comment made on page 6-21 where it says, "The plan will not cause population growth itself, but will affect location decisions."

G-115 The data is more detailed and is designed to be used for decisions at the planning stage of review.

G-116 Please refer to the response for comments 2-1, 1-122 and 1-15, Addendum Attachments 1 and 2 and Appendices 1 and 2 to this comment letter.

G-117 Refer to Attachment 1 and 2 and to the response for comment G-1.

G-118 Please refer to the response for comment 2-170.

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Attachment A

Evaluation of Alternative Attainment
Plans for the South Coast Air Basin:
Interim Progress on PM10 Analyses

Prepared by
System Applications, Inc.

January 30, 1989

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Interim Report

**EVALUATION OF ALTERNATIVE ATTAINMENT
PLANS FOR THE SOUTH COAST AIR BASIN:
INTERIM PROGRESS ON PM10 ANALYSES**

SYSAPP-89/019

30 January 1989

Prepared for

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EXECUTIVE SUMMARY

A study is now in progress to further compare the draft 1988 Air Quality Management Plan and an alternative to it proposed by the Western States Petroleum Association. A final report on study results is due in time for submittal prior to the 17 March 1989 AQMP hearing. Study analyses are not yet completed. Major study conclusions, therefore, must be deferred, pending study completion. However, several preliminary conclusions appear warranted based on interim results presented in this report. Preliminary conclusions are as follows:

- G-119 1. Attainment of NO₂ and CO standards is predicted to be achieved by the WSPA plan. Like the AQMP, the WSPA plan should also attain federal NO₂ and CO standards. Attainment status with respect to PM₁₀ is not yet known with certainty, awaiting completion of analyses of the effect of ROG (and possibly ammonia) reduction on PM₁₀.
- G-120 2. ROG reduction will also reduce nitrate and sulfate PM₁₀. Preliminary qualitative evidence suggests that ROG reduction, though implemented primarily for ozone reduction, will also reduce nitrate and sulfate PM₁₀. Completion of study analyses will be necessary for better estimation of the magnitude of the ROG effect on PM₁₀. Credit for this effect is not taken in the AQMP analysis approach, which assumes that only NO_x and SO_x reductions will reduce secondary PM₁₀. Accounting for the effect will further lower predicted PM₁₀ levels under both the AQMP and the WSPA plan.
- G-121 3. Ammonia reduction may also reduce nitrate and sulfate PM₁₀. Significant ammonia sources exist, particularly in the eastern basin, that affect the amount of nitrate and sulfate PM₁₀ formed. Ammonia emissions may play a particularly important role in PM₁₀ formation in the eastern portion of the basin, where PM₁₀ levels are highest. Ammonia reduction will occur as these sources (e.g., feed lots, dairy farms, etc. in the Chino area) close due to urban residential or commercial expansion. This may result in reductions in downwind nitrate and sulfate PM₁₀ levels. The extent of this effect, and its interrelationship with basin nitric acid levels, is unknown, but may be significant.

G-119

The control strategy presented in the AQMP (Tier III) will result in NO₂ levels well below both the federal annual average standard and the California state one-hour average standard. In contrast, the WSPA alternative strategy (low NO_x control) will cause higher NO₂ concentrations basinwide and may not be adequate to meet the federal annual standard at inland locations. The alternative control scenario will also not be sufficient to bring the entire Basin into compliance with the state one-hour average NO₂ standard.

District analysis, using the PM₁₀ model described in the AQMP, indicates that the WSPA alternative control plan will not come close to attaining either the federal 24-hour (150 ug/m³) or annual (50 ug/m³) PM₁₀ standard. This is summarized in the following table, which compares annual average and peak 24-hour average PM₁₀ predictions at five locations under several control strategy options (including the 1986 base case for comparison).

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| G-120 | 2. ROG reduction will also reduce nitrate and sulfate PM10. Preliminary qualitative evidence suggests that ROG reduction, though implemented primarily for ozone reduction, will also reduce nitrate and sulfate PM10. Completion of study analyses will be necessary for better estimation of the magnitude of the ROG effect on PM10. Credit for this effect is not taken in the AQMP analysis approach, which assumes that only NO _x and SO _x reductions will reduce secondary PM10. Accounting for the effect will further lower predicted PM10 levels under both the AQMP and the WSPA plan. |
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G-120

ROG controls reduce secondary organic particulate species in direct proportion to emissions.

The dispersion model was used to predict long-term pollutant concentrations (monthly and annual averages) and is therefore not very sensitive to the effect of altering ozone concentrations, which are typically high during only a small fraction of the modeled hours. While it is accepted that controls which greatly reduce ozone concentrations will have some effect on the secondary PM₁₀ formation potential, and that modeling for future year PM₁₀ concentrations should include these changes in atmospheric conditions, this is not practical for this AQMP modeling approach. The PM₁₀ model development and application was performed long before ozone model results were available. Even if the ozone results were available, these results only consider a single episode and it would be nearly impossible to translate this information to gridded concentration estimates for every hour of the year.

In addition, the set-up and computer time required to run many additional future scenario model runs (for example, considering controls which affect the spatial distribution of emissions, such as NO_x emission changes due to changes in traffic patterns) is beyond the scope of the present study. One of the major reasons why this type of model was used is that it can provide long-term pollutant concentration predictions inexpensively. More sophisticated models could have been developed; including many non-linear processes; however, these models could not be applied for long-term averages because the time step in the model would have to be shortened to approximately one minute instead of one hour. This would require an extensive amount of computer time.

The objective of the AQMP modeling approach is to assess the effect of controls on air quality. The changes in atmospheric conditions affecting formation potential is not as important to PM₁₀ concentrations as the changes in emission rates from the major sources of PM₁₀. The omission of the effect of ozone concentration changes on secondary transformation rates will add to the uncertainty of the model results. This will cause the transformation rate to be over predicted for a handful of hours, and is therefore a minor conservative factor which is included in the results. Therefore, the District staff believes that the omission of ozone changes would not

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significantly change the results of source apportionment for PM_{10} nitrates.

In fact, the effect of ROG reduction in nitrate formation is small. Sensitivity tests performed on the chemical mechanism, which accounts for the nitrate formation rate in the model, has indicated that:

1. If ozone were bounded down to 0.04ppm (all hours above 0.04 were set equal to 0.04) reduction of nitrate during July 1985 is 2.7 percent (monthly average).
2. If, in addition to the ozone bound described above, the HC/NO_x ratio is bound down to 1.0, then reduction of nitrate is 3.5 percent (monthly average July).
3. If zone is bound to 0.04, HC/NO_x is bound down to 1.0 and relative humidity is bound goes to 70 percent, then reduction of nitrate is 5.2 percent (July monthly average).
4. If ozone is equal to $3/4$ of 1985 levels at every hour of the month (day and night), and HC/NO_x has a maximum of 1.0, then reduction of nitrate is only 10.1 percent (July monthly average).

These are fairly extreme input changes and are shown to have a relatively minor effect on resulting nitrate concentrations.

These are serious concerns regarding the modeling approach suggested by WSPA to incorporate the effects of ROG controls on secondary PM_{10} formation.

1. During the June 1985 episode suggested for modeling peak PM_{10} , the nitrates were only 27 percent of the PM_{10} mass at Rubidoux ($165 \mu\text{g}/\text{m}^3$ after nitrate decay adjustment) whereas during the design event used in the AQMP (October 29, 1986) the nitrates accounted for 52 percent of the nitrates. This difference is significant. Examination of compositions at Rubidoux indicates that the nitrate portion is usually much higher during peak PM_{10} events, than for the annual average.

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2. The results of UAM modeling for one three-day high ozone event cannot be extrapolated to a peak PM₁₀ event similar to that which occurred during October 1986.
3. The use of the UAM model with aerosol chemistry is highly suspect at the present time. This modeling procedure is completely invalidated. It is highly unlikely that this modeling approach can be validated in the short period of time necessary to incorporate information from such a model into the control plans being prepared in this AQMP process.

The incorporation of aerosol chemistry into the UAM model was investigated in the Star project, which was undertaken three years ago and funded by the District (\$100,000). Although the results of this study showed promise for future model development, it was widely agreed that the model did not accurately reflect the aerosol chemistry and physics and was rejected by the District for use the AQMP. It should be noted that the UAM model, which predicts peak ozone concentrations accurately, has not been validated for predicting NO₂ concentrations in the South Coast Air Basin, and is not used for this purpose. So it is even more compelling that the UAM model including aerosol dynamics not be used for control strategy evaluation purposes.

G-121

It is not acceptable to the District to consider reductions of ammonia emissions, which will cause some reduction in secondary particle formation, and therefore PM₁₀ concentrations, as a "control" for PM₁₀. The trade off between nitrate and other nitrogen containing compounds (nitric acid, PAN, etc.) is not acceptable. The overall air quality must be considered whether standards exist or not. It is far better to remove the precursors of these harmful nitrogen compounds than to merely shift the balance between nitrate and nitric acid.

The reduction of ammonia emissions will lower ammonium ion concentrations but this species is only a minor fraction of PM₁₀ concentrations. Also, there is insufficient data available for statistical distribution methods.

EPA regulations and the PM₁₀ SIP Development Guidance dictate the use of Rubidoux should be used as the Basin design value for the 24-hour PM₁₀ standard. The PM₁₀ episode which occurred on

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EXECUTIVE SUMMARY

A study is now in progress to further compare the draft 1988 Air Quality Management Plan and an alternative to it proposed by the Western States Petroleum Association. A final report on study results is due in time for submittal prior to the 17 March 1989 AQMP hearing. Study analyses are not yet completed. Major study conclusions, therefore, must be deferred, pending study completion. However, several preliminary conclusions appear warranted based on interim results presented in this report. Preliminary conclusions are as follows:

- | | |
|-------|---|
| G-119 | <p>1. <u>Attainment of NO₂ and CO standards is predicted to be achieved by the WSPA plan.</u> Like the AQMP, the WSPA plan should also attain federal NO₂ and CO standards. Attainment status with respect to PM₁₀ is not yet known with certainty, awaiting completion of analyses of the effect of ROG (and possibly ammonia) reduction on PM₁₀.</p> |
| G-120 | <p>2. <u>ROG reduction will also reduce nitrate and sulfate PM₁₀.</u> Preliminary qualitative evidence suggests that ROG reduction, though implemented primarily for ozone reduction, will also reduce nitrate and sulfate PM₁₀. Completion of study analyses will be necessary for better estimation of the magnitude of the ROG effect on PM₁₀. Credit for this effect is not taken in the AQMP analysis approach, which assumes that only NO_x and SO_x reductions will reduce secondary PM₁₀. Accounting for the effect will further lower predicted PM₁₀ levels under both the AQMP and the WSPA plan.</p> |
| G-121 | <p>3. <u>Ammonia reduction may also reduce nitrate and sulfate PM₁₀.</u> Significant ammonia sources exist, particularly in the eastern basin, that affect the amount of nitrate and sulfate PM₁₀ formed. Ammonia emissions may play a particularly important role in PM₁₀ formation in the eastern portion of the basin, where PM₁₀ levels are highest. Ammonia reduction will occur as these sources (e.g., feed lots, dairy farms, etc. in the Chino area) close due to urban residential or commercial expansion. This may result in reductions in downwind nitrate and sulfate PM₁₀ levels. The extent of this effect, and its interrelationship with basin nitric acid levels, is unknown, but may be significant.</p> |

October 29, 1986 does not meet the criteria of exceptional events and should therefore be included for control strategy planning.

Note: The peak 24-hour average PM₁₀ concentration recorded in the Basin during January through October, 1988 was 289 ug/m³, recorded at San Bernardino on October 24, 1988. Sulfates (adjusted for cation) accounted for 21 ug/m³ (7 percent of PM₁₀ mass) and nitrates (adjusted for cations) accounted for 100 ug/m³ (35 percent). On the same day, Fontana recorded a PM₁₀ concentration of 287 ug/m³. The meteorology on that day was characterized by a strong elevated inversion and a stagnant wind field (there were two first stage ozone alerts). This is further evidence that it is quite reasonable to construct a design value for the 24-hour federal standard based on a 24-hour average PM₁₀ measurement of 294 ug/m³ (before adjustment for nitrate decay), which was observed at Rubidoux on October, 1986.

G-122

4. Several different EPA-acceptable methods are available for calculating the PM₁₀ design value. The design value is the concentration that must be reduced to the level specified by the standard to demonstrate attainment of the standard. The greater the degree by which the design value exceeds the standard, the greater the degree of emission reduction required to demonstrate attainment. The SCAQMD has chosen one means to calculate the design value--the highest concentration measured during 1985-1987. However, other equally EPA-acceptable means could also be chosen, at the District's option, that would give a significantly lower design value (up to 14 percent) and, consequently, reduce the degree of control required to demonstrate attainment.

G-122

District has considered the alternative approaches and has concluded that the "Table Look Up" method comes closest to representing the intent of EPA to control 24-hour peak PM₁₀ concentrations. Also, there is insufficient data available for statistical distribution methods.

EPA regulations and the PM₁₀ SIP Development Guidance dictate the use of Rubidoux should be used as the Basin design value for the 24-hour PM₁₀ standard. The PM₁₀ episode which occurred on October 29, 1986 does not meet the criteria of exceptional events and should therefore be included for control strategy planning.

Note: The peak 24-hour average PM₁₀ concentration recorded in the Basin during January through October, 1988 was 289 $\mu\text{g}/\text{m}^3$, recorded at San Bernardino on October 24, 1988. Sulfates (adjusted for cations) accounted for 21 $\mu\text{g}/\text{m}^3$ (7 percent of PM₁₀ mass) and nitrates (adjusted for cations) accounted for 100 $\mu\text{g}/\text{m}^3$ (35 percent). On the same day, Fontana recorded a PM₁₀ concentration of 287 $\mu\text{g}/\text{m}^3$. The meteorology on that day was characterized by a strong elevated inversion and a stagnant wind field (there were two first stage ozone alerts). This is further evidence that it is quite reasonable to construct a design value for the 24-hour federal standard based on a 24-hour average PM₁₀ measurement of 294 $\mu\text{g}/\text{m}^3$ (before adjustment for nitrate decay), which was observed at Rubidoux on October 29, 1986.

4. Several different EPA-acceptable methods are available for calculating the PM10 design value. The design value is the concentration that must be reduced to the level specified by the standard to demonstrate attainment of the standard. The greater the degree by which the design value exceeds the standard, the greater the degree of emission reduction required to demonstrate attainment. The SCAQMD has chosen one means to calculate the design value--the highest concentration measured during 1985-1987. However, other equally EPA-acceptable means could also be chosen, at the District's option, that would give a significantly lower design value (up to 14 percent) and, consequently, reduce the degree of control required to demonstrate attainment.

PROJECTED PM10 CONCENTRATIONS (ug/m³)

| Strategy | Long Beach | Los Angeles | Burbank | Ontario | Rubidoux |
|-----------------------------|------------|-------------|---------|---------|----------|
| ANNUAL AVERAGE | | | | | |
| 1986 Base Case | 60.4 | 63.8 | 68.1 | 82.4 | 90.3 |
| SCE (2010) | 48.1 | 52.2 | 55.4 | 68.7 | 78.4 |
| WSPA | 48.1 | 52.8 | 56.3 | 69.4 | 79.4 |
| Tier II (2010) | 30.3 | 30.8 | 30.1 | 39.8 | 48.6 |
| Tier III (2010) | 26.4 | 26.1 | 26.6 | 34.7 | 44.2 |
| PEAK 24-HOUR AVERAGE | | | | | |
| 1986 Base Case | 163.9 | 216.8 | 242.5 | 310.2 | 321.8 |
| SCE (2010) | 119.8 | 168.5 | 185.3 | 243.2 | 242.8 |
| WSPA (2010) | 117.1 | 167.3 | 186.9 | 244.8 | 246.9 |
| Tier II (2010) | 68.9 | 91.6 | 104.5 | 130.2 | 129.1 |
| Tier III (2010) | 57.9 | 77.8 | 86.8 | 108.4 | 107.1 |

EVALUATION OF ALTERNATIVE ATTAINMENT
PLANS FOR THE SOUTH COAST AIR BASIN:
INTERIM PROGRESS ON PM10 ANALYSES

In work now underway, Systems Applications is conducting analyses to further compare the South Coast Air Quality Management District's (SCAQMD) draft 1988 Air Quality Management Plan (AQMP) and an alternative to it proposed by the Western States Petroleum Association (WSPA). These analyses, which are described below, are in progress, with final results expected during February. Recognizing that written AQMP comments are due for submittal by 1 February 1989, however, this interim report has been prepared describing (a) the work tasks being carried out and (b) preliminary results obtained to date. More complete documentation of study results obtained from work now underway will be presented in a subsequent report, provided prior to the 17 March SCAQMD Governing Board hearing.

BACKGROUND

The South Coast Air Quality Management District has developed and is currently reviewing a draft 1988 air quality management plan (AQMP, 1988) for possible adoption at its 17 March 1989 board hearing. Once adopted, the AQMP will establish a 20-year plan whereby the South Coast Air Basin (SOCAB) will seek to attain and maintain ambient clean air standards.

As part of its review of the AQMP, WSPA has sponsored a series of studies evaluating the AQMP and an alternative plan developed by WSPA. The AQMP would control emissions of both reactive organic gases (ROG) and nitrogen oxides (NO_x) in roughly equal amounts (reductions of 84 percent ROG and 81 percent NO_x , respectively). In contrast, the WSPA plan would primarily control ROG emissions, including only those NO_x emissions that unavoidably accompany primarily-ROG control measures. The WSPA plan would reduce ROG in the SOCAB by 67 percent and NO_x by 31 percent.

The AQMP seeks to attain all relevant clean air standards. Likewise, WSPA is sponsoring analyses to determine the extent to which its plan also attains those standards. For submittal at the SCAQMD board hearing on 16 December 1988, using the same ozone modeling approach employed by the District, Hayes et al. (1983) calculated peak ozone levels, ozone exposure, and acute ozone-induced health risk for the AQMP and the WSPA plan, in the years 2000 and 2010. The analyses used the Urban

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Airshed Model and the same baseline emission and control measure data bases employed to develop the ozone portion of the AQMP. Ozone modeling to support AQMP development was also done by Systems Applications (AQMP, Appendix V-S, 1988).

Hayes et al. (1988) concluded that, while the two plans would result in comparable peak ozone levels in 2010 (12.6 pphm--AQMP, 12.7 pphm--WSPA), the WSPA plan would achieve lower ozone exposure and acute ozone-induced health risk than the AQMP and would do so sooner, with Year 2000 peak ozone levels projected to be lower with the WSPA plan than with the AQMP (17.7 pphm--AQMP, 14.1 pphm--WSPA). Study findings and their technical basis were presented at a board workshop on 10 January 1989.

STUDY PURPOSE

Ozone is widely viewed as causing potentially serious lung damage (EPA, 1987). Furthermore, SOCAB ozone levels are the highest in the country, exceeding the standards by a greater margin than any other pollutant for which ambient standards have been set (by as much as a factor of 3). Therefore, initial comparison of the AQMP and the WSPA plan (Hayes et al., 1988) focused on the ozone attainment portion of the AQMP.

ROG and NO_x emissions also combine in the atmosphere to form other pollutants for which standards have been established, including NO_2 and PM_{10} . The primary goal of the current study is to evaluate the WSPA plan's effect on other standards, comparing concentration levels projected to result from implementation of the WSPA plan with those projected for the AQMP. Should attainment not be achieved with the WSPA plan as currently defined, the study will seek to estimate the degree of additional control that would have to be incorporated in the plan to assure attainment. Specific purposes of the study are as follows:

- Evaluate the WSPA plan's effect on PM_{10} , NO_2 , and CO, comparing levels projected to result from implementation of the WSPA plan with those projected under the AQMP
- Compare projected levels with ambient air standards to judge resulting basin attainment status, estimating the extent of any additional reductions that might be needed for attainment
- Develop tools for a preliminary comparison of PM_{10} and ozone exposure and health risk differences between the AQMP and the WSPA plan (to the extent feasible within study resource and time constraints)
- Integrate study results with previous ozone analyses.

WORK SCOPE

The study will estimate the WSPA plan's effect on future basin PM10 and NO₂ levels, comparing them with ones projected under the AQMP. In carrying out the study, we plan to perform the following tasks:

1. Calculate WSPA plan PM10 and NO₂ levels with the same methodology used by the District in preparing the AQMP. Such estimation will be done using the methodology and data contained in AQMP Appendix V-O for PM10 and AQMP Appendix V-A for NO₂. Attainment of the federal NO₂ standard with the WSPA plan will be demonstrated; PM10 attainment status will be assessed after completion of Tasks 2 and 3, with the extent of any additional emission reductions required for attainment estimated. Such reductions could be obtained from reductions in emissions of primary PM10 and/or precursors of secondary PM10 (e.g., NO_x).
2. Refine the PM10 estimates from Task 1 to include probable further PM10 reductions resulting from ROG control measures. While implemented primarily for ozone control, ROG reductions will not only reduce ozone, but also secondary nitrate and sulfate PM10. Credit for this reduction is not taken in the AQMP, which assumes secondary nitrate and sulfate PM10 will be reduced only by reductions in primary NO_x and SO_x emissions. Accounting for the effect of ROG reduction will lower estimated WSPA plan PM10 levels. To carry out the task, the Urban Airshed Model will be modified to incorporate important secondary nitrate and sulfate PM10 formation processes, linked with a basin ammonia emission inventory (Russell and Cass, 1986) and run to estimate the magnitude of the ROG effect on formation of such species as nitric acid and secondary nitrate and sulfate PM10 (i.e., ammonium nitrate and ammonium sulfate).
3. Evaluate alternative EPA-acceptable means for calculating PM10 design values. EPA guidelines for PM10 state implementation plan preparation (EPA, 1984) allow the design value* to be calculated in several different ways, each of which may result in different, equally EPA-acceptable

* The design value is the concentration that must be reduced to the concentration level specified by the standard. For example, the federal PM10 24-hour standard allows no more than three exceedances (concentration values above the level of the standard) in three years. If PM10 monitoring values were available for every day of a three-year period (typically, they are measured only every 6 days), the design value would be the fourth highest value occurring during the three years.

values. Some of the design value estimates are lower than that in the AQMP. Proposal of such alternative values by SCAQMD staff, while requiring their initiative to do so, would be acceptable under EPA guidelines and would reduce the degree of control needed to demonstrate attainment of federal PM₁₀ standards.

4. Develop tools to perform a preliminary analysis of PM₁₀ exposure and health risk differences between the AQMP and the WSPA plan. The AQMP and the WSPA plan will affect ozone and PM₁₀ in different, possibly conflicting ways. The most appropriate way to compare the two plans is to calculate net ozone and PM₁₀ health exposure and risk differences between the plans. To the extent feasible within study resources and the limited time available prior to the 17 March hearing, development of tools to characterize PM₁₀ exposure under the AQMP and the WSPA plan will be initiated. Incorporating suitable health dose-response data or, lacking that, using surrogate health weighting techniques, net ozone and PM₁₀ health implications of the exposure differences between the two plans will be assessed to the extent feasible.
5. Integrate control strategy design issues. Study results will be integrated with previous ozone results. A number of issues arise in control strategy design regarding different, possibly competing effects of ROG and NO_x emission reductions. To the extent feasible, these issues will be addressed, integrating them across different pollutants (ozone, NO₂, and PM₁₀) and effects (peak concentrations, exposure, and health risk).

If, upon completion of the above work, peak PM₁₀ levels estimated for the WSPA plan remain above the federal standard, additional control measures will have to be added to the WSPA plan to assure PM₁₀ attainment. Necessary PM₁₀ reductions could come from (a) additional control of primary PM₁₀ emissions and/or (b) additional NO_x control measures (along with the additional ROG controls necessary to attain the ozone standards and compensate for those additional NO_x reductions).

PRELIMINARY RESULTS

NO₂ and CO Attainment with the WSPA Plan

Previously, the WSPA plan's effect on ozone was calculated using the Urban Airshed Model (Hayes et al., 1988). UAM analysis indicated that Year 2000 peak ozone would be lower with the WSPA plan (14.1 pphm) than with the AQMP (17.7 pphm). In 2010, peak ozone levels would be comparable for the two plans (12.6 pphm with the AQMP and 12.7 pphm with the WSPA plan). Thus, given modeling and data uncertainty, roundoff practices in which all concentration values below 12.5 pphm are reported as 12 pphm (the level of the standard), and the fact that the federal ozone standard allows up to 3 exceedances of 12 pphm over a 3-year period, the two plans are

arguably in attainment of the federal ozone standard. Neither plan would attain the state ozone standard.

Since the AQMP seeks to demonstrate attainment of all relevant ambient standards, the effect of the WSPA plan on other pollutants must also be estimated. First, attainment of SO₂ and lead ambient standards is not an issue in the basin. With respect to CO, Hayes et al. (1988) noted that the AQMP projects CO attainment with AQMP Tier I controls (modeling region CO reductions of 54 percent over baseline 2010 emissions). The WSPA plan projects CO reductions of 62 percent (see Appendix C of Hayes et al., 1988), greater than that of Tier I reductions. If AQMP Tier I measures would attain CO standards, as projected by the AQMP, then it is likely that the WSPA plan would also do so.

With respect to NO₂ attainment, Hayes et al. (1988) speculated that because of the wide margin of attainment of the federal NO₂ standard projected by the AQMP, even for Tier I measures, the WSPA plan would likely also attain the federal standard. In subsequent analyses, the same methodology used by the District in preparing the AQMP has now been used to project Year 2010 NO₂ levels resulting from WSPA plan implementation.

The methodology used is described in AQMP Appendix V-A. That methodology assumes that emissions from 16 different source categories can be related to NO₂ concentrations at basin monitors by a source-receptor transfer matrix. Emissions calculated for the WSPA plan in 2010 are tabulated by source category in Table 1. These emissions were combined with appropriate transfer matrix coefficients to calculate projected annual NO₂ concentrations.

Figure 1 presents the results of these calculations at the same five stations highlighted in AQMP Appendix V-A: Long Beach, Whittier, Los Angeles, Burbank, and Pomona. These stations include Burbank and Los Angeles, the stations that have measured the highest current NO₂ levels and are projected to have the highest 2010 baseline NO₂. For comparison, baseline 1985 and 2010 levels are shown, along with the projected AQMP concentration.

Results demonstrate that, even using the AQMP modeling methodology (which does not account for NO₂ reductions likely to result from ROG control), the WSPA plan would be expected to attain the federal NO₂ standard by a comfortable margin. The extent to which the AQMP and the WSPA plan attain the state NO₂ standard is unknown, although the likelihood of a 1-hour NO₂ concentration of 25 pphm occurring when peak ozone levels have been reduced to 12 pphm or below seems small. Both pollutants are produced by similar photochemical processes, whose strength would be greatly reduced upon reaching ozone attainment.

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TABLE 1. Remaining SOCAB emissions (tons/day) under WSPA plan in 2010, by SCAQMD modeling category.

| Category | ROG | NO _x | CO | SO _x |
|----------------------------|--------|-----------------|---------|-----------------|
| On-road mobile sources | 77.97 | 386.27 | 1119.05 | 20.81 |
| Residential space heating | 0.73 | 13.68 | 4.52 | 0.14 |
| Residential water heaters | 0.10 | 8.98 | 1.86 | 0.09 |
| Refinery boilers & heaters | 1.97 | 18.46 | 1.44 | 1.16 |
| Utility IC engines | 0.61 | 4.11 | 2.35 | 0.12 |
| Non-utility IC engines | 1.36 | 7.50 | 8.28 | 1.25 |
| Refinery FCCU | 0.00 | 3.26 | 0.29 | 12.20 |
| Cement kilns | 0.00 | 5.11 | 0.46 | 0.06 |
| Glass melting furnaces | 0.03 | 3.67 | 0.06 | 1.96 |
| Non-farm equipment | 14.27 | 18.77 | 164.28 | 0.24 |
| Railroads | 3.61 | 11.56 | 7.60 | 1.02 |
| Commercial jet & aircraft | 11.22 | 5.75 | 78.98 | 0.89 |
| Shipping | 2.44 | 38.00 | 6.38 | 10.55 |
| Utility boilers | 1.65 | 41.37 | 4.92 | 5.37 |
| Industrial boilers | 4.83 | 49.61 | 36.31 | 12.21 |
| Miscellaneous | 257.17 | 105.46 | 361.15 | 19.62 |
| TOTAL | 377.96 | 721.56 | 1797.93 | 87.68 |

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Projected Annual Average NO₂ Concentrations

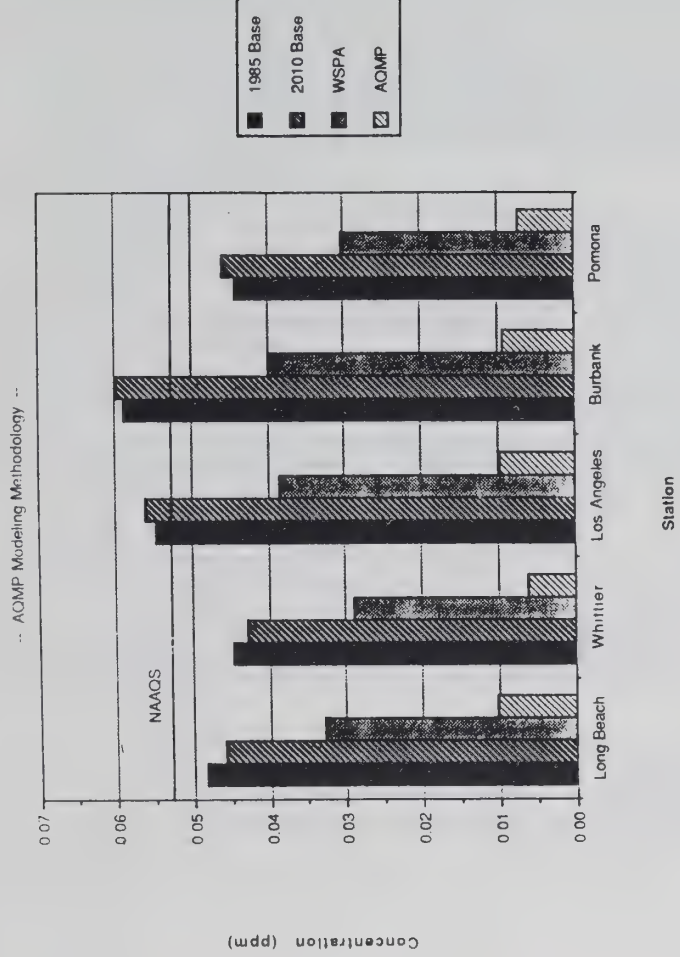


FIGURE 1. Annual NO₂ concentrations projected using the AQMP modeling methodology.

PM10 Design Value Calculation Alternatives

To demonstrate attainment of an ambient standard, it is necessary first to calculate the "design value," and then identify sufficient emission control measures to reduce the design value to the concentration specified by the standard. The design value is a measure of pre-control ambient air quality. The lower the design value, the less the emission reductions required to demonstrate attainment.

Control strategy design, then, is closely dependent on the magnitude of the design value, since it represents the "bullseye" in the control strategy target. A difficulty in PM10 control strategy design comes from the fact that the design value can be calculated by several different, but equally EPA-acceptable methods. The method used by SCAQMD staff is one such method, but other methods are also acceptable and would lead to a lower design value (and thus less control required to demonstrate standard attainment).

In part, the availability of alternative design value calculation methods is due to the fact that the federal PM10 standards are written in a statistical form: The federal 24-hour PM10 standard allows the concentration level of the standard ($150 \mu\text{g}/\text{m}^3$) to be exceeded no more than three times during any three-year period; the federal annual PM10 standard limits the average of the individual annual averages over three years to $50 \mu\text{g}/\text{m}^3$. If 24-hour measurements were available for each day during a three-year period, the design value would be the fourth highest measured value. An additional complexity in PM10 design value calculation is the fact that complete every-day data are not usually available; instead, as is the case in the SOCAB, 24-hour measurements are typically made only every 6 days.

EPA has prepared a guideline to assist states in preparing PM10 state implementation plans (EPA, 1984). That guideline identifies the following different methods for calculating 24-hour PM10 design values:

Table look-up. With this method, a table is used to relate the rank of the concentration measurement to be used as the design value to data availability. Where data are available only every 6 days, the design value is taken to be the highest measured concentration value during a three-year period. This is the approach used by SCAQMD staff in developing the AQMP.

Fitting a statistical distribution to several years of data. With this method, the highest measured every-6th-day concentrations are fit with a statistical distribution. The federal 24-hour standard specifies an allowed frequency of occurrence of concentrations greater than the level of the standard: The federal standard allows up to 3 exceedances in three years. The design value, then, is the concentration corresponding to a frequency of occurrence of 1/365 (or, equivalently, 3/1096). Attainment is demonstrated when this concentration is reduced to the concentration level of the standard. The 1/365-th fractile concentration can be estimated directly from the statistical distribution fit to the data.

Graphical estimation using the empirical frequency distribution of several years of data. This method is similar to the statistical distribution method, except that, rather than using a statistical distribution fit to the data, the empirical frequency distribution formed by the data itself is used. The design value, which is the concentration value corresponding to the allowed frequency of exceedance of 1/365, is read directly off a graph of the data.

Conditional probability approach. Rather than grouping data from several years, this approach allows individual years of data to be treated separately. Separate statistical distributions are fit to each year's data, with a probability of reoccurrence assigned to each year. The design value is calculated as a weighted sum of the yearly design values, as estimated from the individual year statistical distributions. This method is characterized by EPA (1984) as "somewhat theoretical in nature."

For the SOCAB, PM10 data are collected every sixth day, resulting in about 180 data values per three years. With this number of values, the table look-up procedure states that the highest concentration measured during three years be used as the design value. This is the approach used by SCAQMD. With it, the design value calculated for 1985-1987 would be 294 $\mu\text{g}/\text{m}^3$ (before correction for filter nitrate loss), as measured at Rubidoux on 29 October 1986.

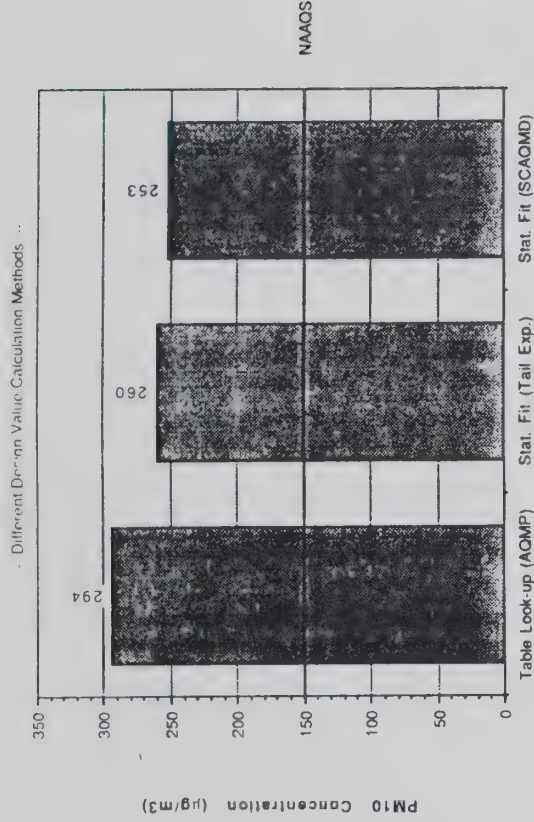
Different design values are obtained using the different calculation methods above. The effect of the design value calculation method was investigated for several alternative approaches. PM10 data from 1985-1987 at Rubidoux were used to estimate the design value obtained with the table look-up procedure and with two statistical distribution fits. Figure 2 compares those design values. The bars in that figure (left to right) represent the design values calculated using:

Bar 1--Table look-up (AQMP): The design value is the highest value measured during 1985-1987

Bar 2--Statistical distribution (tail exponential): The design value is the concentrations corresponding to the 1/365-th fractile of a tail exponential distribution fit to the upper 10 percent of the data (a standard approach consistent with EPA guidelines)

Bar 3--Statistical distribution (lognormal): The design value is the concentration corresponding to the 1/365-th fractile of an extreme value distribution fit by SCAQMD staff to the upper 10 percent of the data; this estimate was taken from SCAQMD/SCAG (1988), which presented staff responses to AQMP comments received by 27 October 1988; it is not clear from SCAQMD/SCAG (1988) what distributional form was used, although both Gumbel and Weibull were mentioned.

24-hour PM10 Design Value (Rubidoux)



Design Value Calculation Method

FIGURE 2. 24-hour average PM10 design values at Rubidoux for 1985-1987, for different EPA-acceptable calculation methods.

In summary, the table look-up method used in developing the draft AQMP appears to be acceptable under EPA PM10 SIP guidelines. However, as demonstrated in the figure, alternative, equally EPA-acceptable methods could also be used that would significantly lower the PM10 design value, and consequently the degree of control required to demonstrate attainment of the federal 24-hour standard. The difference at Rubidoux could be as much as 14 percent (from $294 \mu\text{g}/\text{m}^3$ down to $253 \mu\text{g}/\text{m}^3$).

Effect of ROG Reduction on PM10

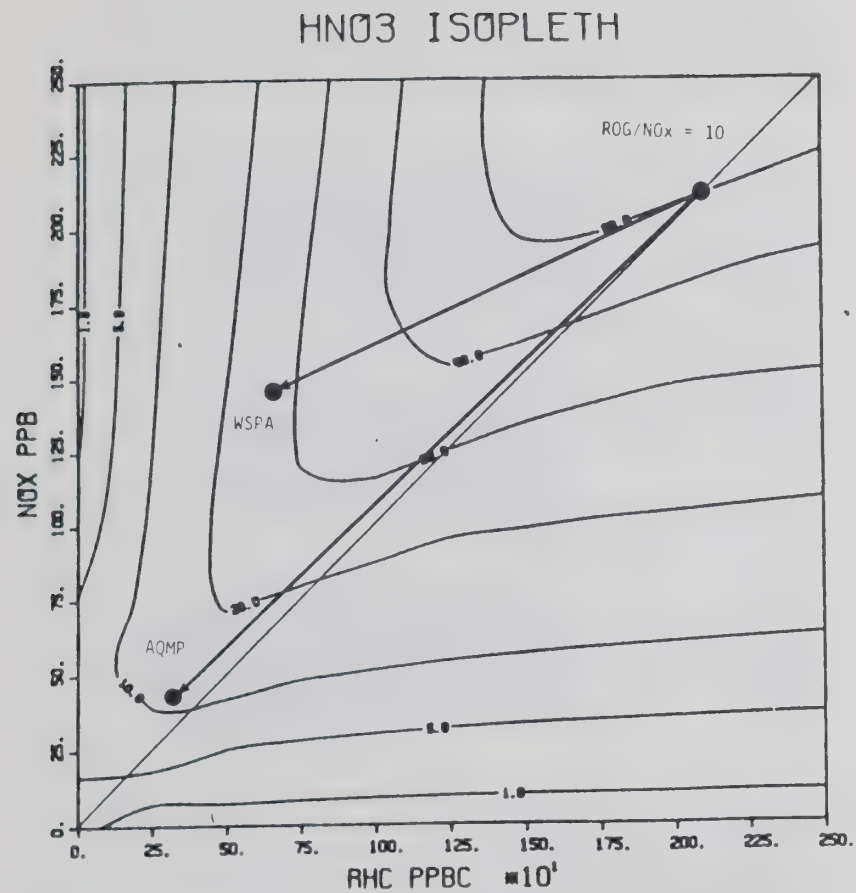
Secondary nitrate PM10 is produced in the atmosphere by complex, nonlinear chemical reactions involving not just NO_x , but also ROG and ammonia. Similarly, sulfate PM10 is formed not just from SO_x , but also through reactions affected by ROG. As a result, nitrate and sulfate PM10 concentrations are reduced not just by NO_x and SO_x emission reductions, but also by reductions in ROG.

The AQMP does not take credit for this effect, assuming instead that nitrate and sulfate PM10 are reduced only through reductions in primary emissions of NO_x and SO_x . While the extent of the ROG effect is as yet unknown, analyses are being carried out in this study to estimate its magnitude.

Ideally, a modeling approach would be used that would account for the ROG effect on both annual and peak 24-hour PM10, fully addressing secondary aerosol formation processes, spatial and temporal emission effects, and ammonia interrelationships. Such a model is not yet available, however. Since such a model has not yet been developed, given the short time remaining before the 17 March hearing, little choice exists but to use available models to examine ROG-PM10 relationships.

Although its performance has not yet been evaluated for PM10-related species, the Urban Airshed Model, modified to address secondary aerosol formation, captures many of the relevant nonlinear photochemical processes, and accounts for potentially important spatial and temporal emission effects. One would wish to run such a model for every day to reliably estimate the effect of ROG reduction on annual PM10 and all the highest 24-hour PM10 days. Such an effort is economically impractical.

Therefore, a more focused analysis is planned. The modified UAM will be exercised for the available 5-7 June 1985 episode. This severe photochemical episode is the same as modeled for AQMP ozone analyses. Given time and resource constraints, it is not possible to develop an additional UAM PM10 episode representing conditions occurring on the 24-hour PM10 design day (29 October 1986). While PM10 levels were not as high during the June 1985 episode as they were on the PM10 design day (a peak value of $294 \mu\text{g}/\text{m}^3$ was measured on the design day, compared to a peak of $158 \mu\text{g}/\text{m}^3$ on 6 June 1985), 91 percent of the days during 1985-1987 measured lower peak PM10 concentrations; only 9 percent measured higher values. Furthermore, the highest 24-hour concentrations were measured at the Rubidoux monitor on both days.



Source: AQMP Appendix V-M

FIGURE 3. Example nitric acid isopleth diagram and illustrative control strategy analysis.

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The AQMP and the WSPA plan will be compared for the June 1985 episode. The modified UAM will be used to estimate secondary aerosol concentrations (e.g., ammonium nitrate ammonium sulfate) for both plans. While extrapolation of results to annual average PM10 and additional high 24-hour PM10 episodes will remain uncertain, results should give important confirmation of the existence, direction, and general magnitude of the ROG-PM10 effect.

Specifically, the Urban Airshed Model is being modified to include chemical processes important in the formation of secondary nitrate and sulfate PM10. Once completed and tested, the new UAM version will be run to estimate the effect of WSPA plan NO_x and ROG emission reductions on nitric acid and secondary nitrate PM10. Results are expected to prove useful in characterizing the magnitude of ROG-related PM10 reductions.

Pending completion of UAM analyses, the magnitude of the ROG effect on PM10 is unknown. However, the direction and general significance of the effect can be broadly assessed, at least in a qualitative way. Figure 3 reproduces a nitric acid isopleth diagram reported in AQMP Appendix V-M. Using this diagram in an analogous manner to the use of ozone isopleth diagrams in EPA's Empirical Kinetic Modeling Approach (EKMA), the extent of peak-hour nitric acid reduction under the AQMP and the WSPA plan can be approximated. For discussion purposes, diagram entry can be accomplished by assuming a typical SOCAB ROG/ NO_x ratio (assumed for discussion to be 10:1) and defining the entry point to be the intersection of that ratio with an arbitrary 1-hour peak nitric acid value of 50 ppb.

Both the AQMP and the WSPA plan are shown on the diagram. Directionally, the shape of the isopleths shows that ROG reduction should reduce peak 1-hour nitric acid levels, even without concurrent NO_x reduction. For the arbitrary example shown, the AQMP would reduce peak nitric acid by about 80 percent; the WSPA plan would reduce it by nearly 50 percent.

The most technically defensible way to address the ROG effect on PM10, though, is through a model that incorporates a more complete treatment of photochemical processes and spatial and temporal source-receptor relationships. The simulation of atmospheric reactions in the Carbon Bond IV (CB-IV) Urban Airshed Model is designed to address ROG and NO_x photochemistry. Since the principal objective in UAM development was the simulation of ozone formation, the original form of the model does not address certain reaction products that are non-reactive, or do not significantly affect ozone formation. Several of these products are important components of secondary aerosols, however.

NO_x emissions are a mixture of nitric oxide (NO) and nitrogen dioxide (NO_2). NO_x participation in atmospheric reactions ultimately leads to its oxidation nitrate, principally nitric acid vapor. The CB-IV mechanism treats these reactions because the accurate simulation of NO_x removal processes is necessary for accurate simulation of ozone formation. Sulfur oxides (SO_x) are emitted mostly as sulfur dioxide

(SO₂), but some fraction of SO_x is emitted as primary sulfate in the form of sulfur trioxide or its hydrated form, sulfuric acid. Inorganic nitrate and sulfate fractions of PM10 concentrations can be large, and nitrates have been identified as a major contributor to exceedances of PM10 ambient air quality standards in the SOCAB.

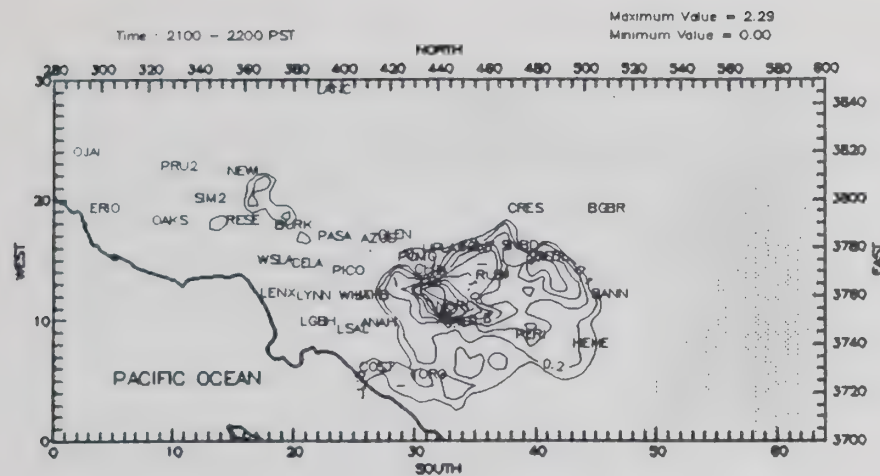
To address this contribution, the UAM has been modified to address the fate of both nitrate and sulfate species through simulation of their subsequent atmospheric reactions and relevant removal processes. The modified UAM simulates

- The oxidation of SO₂ to sulfuric acid
- The oxidation of NO_x to nitric acid
- The oxidation of NO_x to organic nitrates
- The titration of sulfuric acid to ammonium sulfate
- The gas-phase equilibrium involving ammonia, nitric acid vapor, and aerosol ammonium nitrate
- The transport and dispersion of primary particulate emissions
- The removal of aerosol-related species by dry deposition.

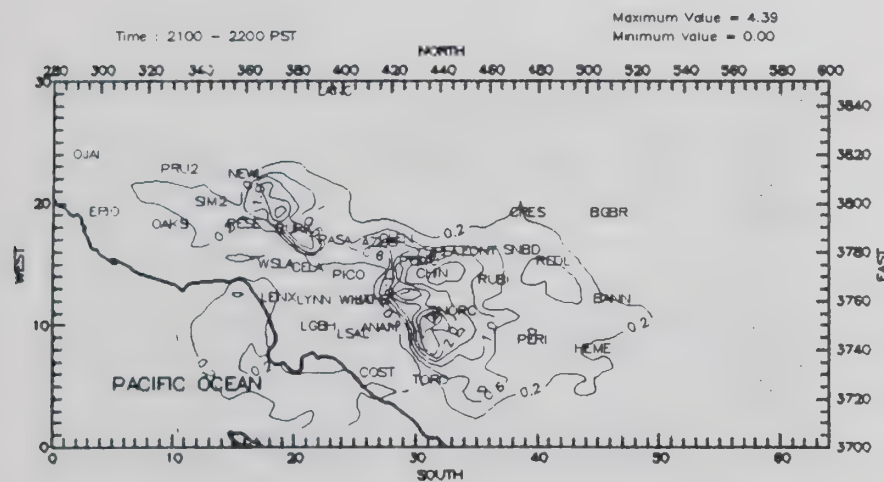
Based on previous studies' findings (Russell and Cass, 1986) regarding the significance of aerosol formation reactions, the UAM was modified by the addition of several new species, and their reactions. Species included in the model are nitric acid, ammonium nitrate, sulfuric acid, ammonium sulfate, and ammonia. Sulfuric acid is treated such that it instantaneously and irreversibly reacts with any available ammonia to form ammonium sulfate aerosol. Nitric acid and any remaining ammonia establish an instantaneous equilibrium concentration through the formation of ammonium nitrate aerosol or the decomposition of any ammonium nitrate currently present. The equilibrium constant for this thermodynamic equilibrium is determined by the current ambient temperature. Dry deposition of these species is treated as for others in the UAM. Nitric acid deposition is assumed to be limited by meteorological conditions. Deposition of other gaseous and aerosol species are further limited by surface resistance factors.

Emission inputs for application of the modified UAM are identical with those used for other SCAB simulations, with two modifications. With the permission of its developer, the ammonia emission inventory described in Russell and Cass (1986) is used. Also, because of the competition between sulfuric and nitric acid for ammonia, the sulfur oxides emission inventory is modified such that 97 percent of SO_x emissions was sulfur dioxide, and the remainder was sulfuric acid. Primary particulate emissions (the UAM species AERO) are those of the previously used emission inventories.

The modified UAM has been used to model the 5-7 June 1985 episode. Sample results of this modeling for 6 June are shown in Figure 4, in which peak-hour ammonium nitrate is shown along with concurrent nitric acid, ammonium sulfate, and ammonia. Complete model results are being reviewed to assess the reasonableness of model predictions for the individual species, as well as for total nitrate (ammonium nitrate plus nitric acid) and total aerosol concentration. Following this assessment, additional simulations of the AQMP and the WSPA plan are planned.

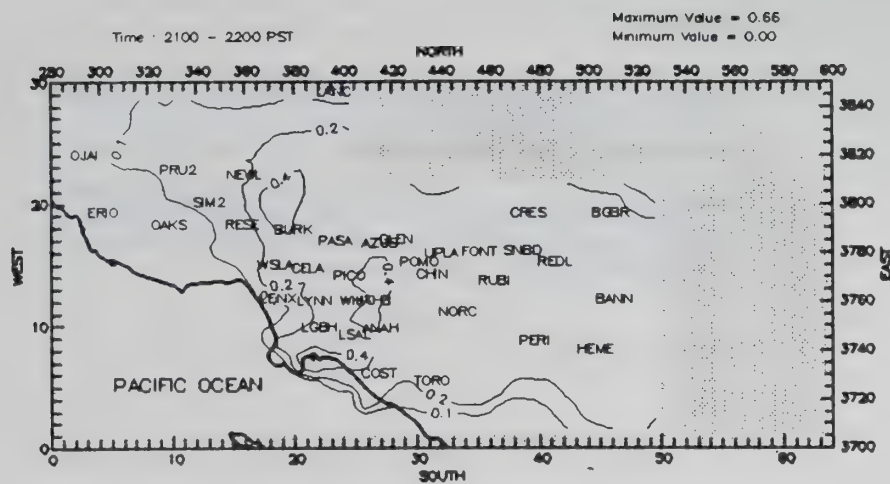


(a) Ammonium nitrate

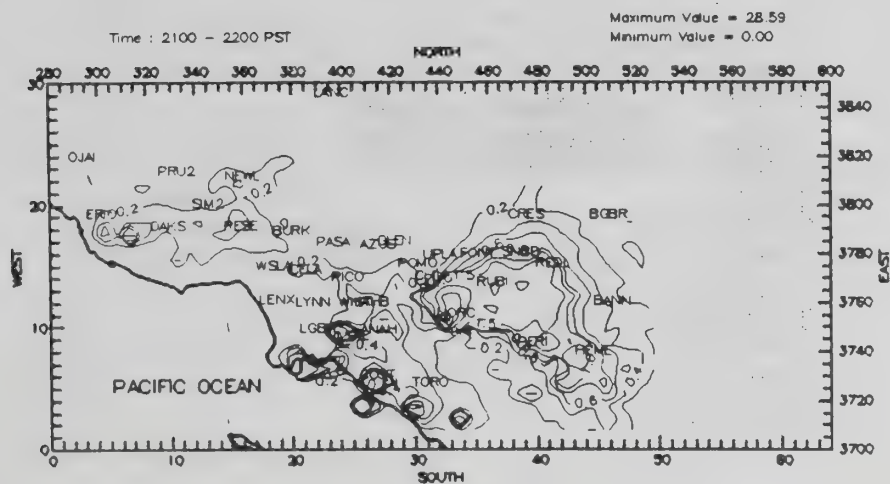


(b) Nitric acid

FIGURE 4. Example concentrations (pphm) predicted by the modified Urban Airshed Model during the peak ammonium nitrate hour, for the 6 June 1985 episode.



(c) Ammonium sulfate



(d) Ammonia

FIGURE 4. (Concluded)

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Attachment B

PM-10 Impacts of the SCAQMD AQMP
and WSPA Alternative Plans:
Interim Findings, Interpretations,
and Investigations in Progress

Prepared by
Radian Corporation

January 30, 1989

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925000



Interim Report

89-267-049-01

PM-10 IMPACTS OF THE SCAQMD AQMP
AND WSPA ALTERNATIVE PLANS:
INTERIM FINDINGS, INTERPRETATIONS,
AND INVESTIGATIONS IN PROGRESS

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January 30, 1989

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EXECUTIVE SUMMARY

Radian Corporation is performing a detailed assessment of the monitoring, modeling and analysis methods used by the South Coast Air Quality Management District in their development of the 1988 Revision to the Air Quality Management Plan (AQMP). The principal objective of Radian's effort is to evaluate the PM-10 impacts of the WSPA Alternative Plan using the same assumptions and procedures developed by the District in their work. Where necessary, refined procedures are being developed to provide improved estimates of the impacts of the two plans.

Radian's work efforts are focused into four areas -- monitoring and data analysis procedures, PM-10 modeling methods, primary particulate emissions control options, and public health impacts. A summary of our present findings, based on the work in progress, is given below. These interim findings may change somewhat as new information is developed.

Monitoring and Analysis Procedures.

PM-10 data from the Rubidoux air monitoring station, used to define the SOCAB 24-hour and annual average design values, should be revisited to address the following concerns:

- | | |
|--------|--|
| G-122a | <ul style="list-style-type: none">• PM-10 data from Rubidoux (total amount and composition) are not representative nor typical of many other sites in the basin. Also, the composition patterns in the annual versus 24-hour PM-10 data suggest rather different source contributions and may require different air quality solutions. |
| G-123 | <ul style="list-style-type: none">• While an upward scaling factor has been applied by the District for nitrate loss (and upward scaling is probably also appropriate to account for ammonium and chloride loss), there appears to be justification for equal or larger downward correction factors due to artifact formation and an oversampling bias of the PM-10 monitoring equipment used by SCAQMD. |

G-122A

Concentrations of PM10 and their compositions are observed to be different between Rubidoux, the eastern-most PM10 sampler used in the AQMP analysis, and other western sites. PM10 concentrations tend to rise from west to east, peaking presumably around the Rubidoux area. The nitrate portion of PM10 exhibits an even greater west to east increase. During peak PM10 events, it has been observed that the nitrate fraction is very high at Rubidoux, and may exceed 50% of the 24-hour average PM10 concentration.

The fact that these peaks occur at Rubidoux does not imply that Rubidoux is not representative of other areas in the Basin. The monitoring site located at Rubidoux is assumed to be representative of a large geographic area surrounding Rubidoux, including Upland, Ontario, Riverside, and to some extent, San Bernardino. The chemical composition of PM10 at Rubidoux is observed to be similar to that at Upland. Rubidoux typically experiences the highest concentrations of PM10 in the Basin, and is therefore used as the design site for PM10 control.

It is suggested by WSPA that "...different control strategies may be required to address annual and 24-hour peak problems at the same site. Factors contributing to a few high days each year may be different from the causes of a high annual average." Examination of the source attributions performed at each location (especially Rubidoux) for peak 24-hour event and for annual average PM10 concentrations reveals that, although the magnitude of the source types are somewhat different, the same sources are responsible for the major portion of PM10 concentrations both annually and on the worst days. So different strategies are not needed to effectively reduce the 24-hour peak and the annual average PM10. This is confirmed in the AQMP which demonstrates that the Tier II level of control is predicted to achieve compliance with both the annual and 24-hour federal PM10 standards (annual average is predicted to be $48.6 \mu\text{g}/\text{m}^3$ at Rubidoux; federal standard is $50 \mu\text{g}/\text{m}^3$, and peak 24-hour average is predicted to be $130.2 \mu\text{g}/\text{m}^3$ at Upland; federal standard is $150 \mu\text{g}/\text{m}^3$).

000580

RADIAN

EXECUTIVE SUMMARY

Radian Corporation is performing a detailed assessment of the monitoring, modeling and analysis methods used by the South Coast Air Quality Management District in their development of the 1988 Revision to the Air Quality Management Plan (AQMP). The principal objective of Radian's effort is to evaluate the PM-10 impacts of the WSPA Alternative Plan using the same assumptions and procedures developed by the District in their work. Where necessary, refined procedures are being developed to provide improved estimates of the impacts of the two plans.

Radian's work efforts are focused into four areas -- monitoring and data analysis procedures, PM-10 modeling methods, primary particulate emissions control options, and public health impacts. A summary of our present findings, based on the work in progress, is given below. These interim findings may change somewhat as new information is developed.

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PM-10 data from the Rubidoux air monitoring station, used to define the SOCAB 24-hour and annual average design values, should be revisited to address the following concerns:

G-122a

- PM-10 data from Rubidoux (total amount and composition) are not representative nor typical of many other sites in the basin. Also, the composition patterns in the annual versus 24-hour PM-10 data suggest rather different source contributions and may require different air quality solutions.

G-123

- While an upward scaling factor has been applied by the District for nitrate loss (and upward scaling is probably also appropriate to account for ammonium and chloride loss), there appears to be justification for equal or larger downward correction factors due to artifact formation and an oversampling bias of the PM-10 monitoring equipment used by SCAQMD.

G-123

Filter media are used by the District to collect PM10 samples. During 1985 and 1986 these filters were not refrigerated after collection -- they were placed in an air tight envelope, shipped to the District, and left on the shelf in the laboratory for a period of time before analysis. The average holding time was about two weeks. The current practice involves refrigeration soon after collection.

District analysis indicated that a significant loss of nitrates was occurring. The study determined the approximate nitrate loss, which was location dependent. There was a fair amount of variability in nitrate loss, however a definite negative bias was observed. An uncertainty in the "true" nitrate concentrations has been established due to the sampling procedures. This cannot be removed given the current level of knowledge. However, the bias can be removed by scaling the nitrate concentrations by the best estimate available for the rate of loss. As stated by WSPA: "The SCAQMD scaling procedure is better than none at all..." District agrees with this assessment.

Until a better method for estimating the true nitrate concentrations is made available, the uncertainty will persist regarding the 24-hour average nitrate concentrations. For the annual average nitrate (and PM10) concentrations, there is much less uncertainty and therefore very little skepticism should be applied when considering annual average concentrations.

WSPA suggests that the loss or gain of water should not be considered a major issue at Rubidoux. District agrees and has not applied any adjustments due to water since the results of these investigations have not provided quantitative information. The data available have not indicated any straightforward correlation between the water content and concentrations of nitrates and sulfates.

The sampling methods used by the District to collect and measure PM10 concentrations satisfies EPA requirements regarding sampling methodology. As of July, 1987, federal regulations had not stipulated the reference method for PM10 collection, but did specify the requirements for the reference method and allowed for equivalent sampling methods to be employed. District used a proper operational method and has followed maintenance requirements of the sampling procedure.

000581



EXECUTIVE SUMMARY

Radian Corporation is performing a detailed assessment of the monitoring, modeling and analysis methods used by the South Coast Air Quality Management District in their development of the 1988 Revision to the Air Quality Management Plan (AQMP). The principal objective of Radian's effort is to evaluate the PM-10 impacts of the WSPA Alternative Plan using the same assumptions and procedures developed by the District in their work. Where necessary, refined procedures are being developed to provide improved estimates of the impacts of the two plans.

Radian's work efforts are focused into four areas -- monitoring and data analysis procedures, PM-10 modeling methods, primary particulate emissions control options, and public health impacts. A summary of our present findings, based on the work in progress, is given below. These interim findings may change somewhat as new information is developed.

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| G-122a | <ul style="list-style-type: none">• PM-10 data from Rubidoux (total amount and composition) are not representative nor typical of many other sites in the basin. Also, the composition patterns in the annual versus 24-hour PM-10 data suggest rather different source contributions and may require different air quality solutions. |
| G-123 | <ul style="list-style-type: none">• While an upward scaling factor has been applied by the District for nitrate loss (and upward scaling is probably also appropriate to account for ammonium and chloride loss), there appears to be justification for equal or larger downward correction factors due to artifact formation and an oversampling bias of the PM-10 monitoring equipment used by SCAQMD. |

WSPA proposes a correction of SA 321A collected data due to over sampling as suggested in the Federal Register (FR 52, 24634, July 1, 1987). District has complied with federal regulations and EPA guidelines and it is not clear where in the Code of Federal Regulations (including modifications and additions made in FR 52, July 1, 1987) this suggestion is stated. If an over sampling bias by the SA 321A is confirmed, and it warrants re-evaluation, adjustments will be made at that time.

WSPA also suggests correcting PM10 concentration data due to the imprecision (scatter) inherent in the operation of the SA 321A. No procedure has been suggested for accomplishing this, however. District knows of no method to perform this task.

WSPA suggests reviewing the PM10 concentration data due to artifact formation by nitric acid. In the Federal Register, Part 50, Appendix J (July 1, 1987), it is stated, regarding nitric acid retention on filters that: "The magnitude of nitrate artifact errors in PM10 mass concentration will vary with location and ambient temperature; however for most sampling locations, these are expected to be small."

Until a method for removing these errors is developed, which proves to be superior to the collection methods currently in practice, District has no alternative but to use the current technique.

000382

- G-124
- Due to the uniqueness of the Rubidoux site in the SOCAR, strategies designed to reduce PM-10 at Rubidoux (e.g., reducing blowing dust and ammonia) may be ineffective at other sites, such as Downtown Los Angeles, where carbonaceous material and nitrate are major components.

PM-10 Modeling Methods.

- G-125
- The adequacy of representing the annual average PM-10 impacts by the arithmetic average of a summer month and a winter month is unsubstantiated; this simplification warrants detailed investigation.
- G-126
- The adequacy of using annual average PM-10 modeling results to characterize worst-case 24-hour average impacts is unproven. Model evaluation exercises are needed for both the annual average and 24-hour averages, using the 1985 data.
- G-127
- Failure to account for future year air quality reductions in the PM-10 modeling leads to an overprediction of inorganic nitrate concentration in the District's 24-hour and annual average PM-10 calculations. The year 2010 impact calculations need to be repeated, reflecting the reduction in ambient NO, NO_x, ROG, and ozone concentrations expected as a direct consequence of the AQMP or WSPA Alternative plans. Indeed, the purpose of both plans is to reduce these contaminant levels.
- G-128
- The 48-hour residence time assumption in the PM-10 modeling methodology misrepresents source-receptor relationships under low wind episodes in the basin. Since mass may be lost artificially from the basin because it is only retained in the model for 48 hours, detailed analysis of this procedure is needed.

G-124

The control strategy has not been designed for the entire Basin based on a non-representative site, as suggested by WSPA. In fact, control strategy options are evaluated for their effect at all locations in the Basin (which are represented by the five sites where compositional data were available and modeling was performed.) The air quality standards require that concentration limits be satisfied at all locations in the Basin.

The control strategies proposed in the AQMP have been evaluated at all five sites where modeling was performed. It was demonstrated that the Tier II level of control would lower PM10 concentrations sufficiently at all locations so that the federal annual and 24-hour PM10 standards are expected to be attained. Whereas, in theory, strategies designed to reduce PM10 may be ineffective at other sites, it is fortunate that the Tier II control strategy does achieve significant reductions in PM10 levels at all sites. In fact, strategies which target controls of sources which affect only one location, such as those strategies proposed which would control fugitive dust and ammonia sources, would be ineffective at western locations.

The Tier II level of control is expected to produce maximum annual average PM10 concentrations at Rubidoux (48.6 µg/m³) and maximum 24-hour PM10 concentrations at Upland (130.2 µg/m³). All locations in the Basin are predicted to experience significant reductions in both long-term and short-term levels of PM10, and the federal PM10 standards are predicted to be attained in 2010 with the Tier II control strategy.

000503

G-124

- Due to the uniqueness of the Rubidoux site in the SOCAB, strategies designed to reduce PM-10 at Rubidoux (e.g., reducing blowing dust and ammonia) may be ineffective at other sites, such as Downtown Los Angeles, where carbonaceous material and nitrate are major components.

PM-10 Modeling Methods.

G-125

- The adequacy of representing the annual average PM-10 impacts by the arithmetic average of a summer month and a winter month is unsubstantiated; this simplification warrants detailed investigation.

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- The adequacy of using annual average PM-10 modeling results to characterize worst-case 24-hour average impacts is unproven. Model evaluation exercises are needed for both the annual average and 24-hour averages, using the 1985 data.

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- Failure to account for future year air quality reductions in the PM-10 modeling leads to an overprediction of inorganic nitrate concentration in the District's 24-hour and annual average PM-10 calculations. The year 2010 impact calculations need to be repeated, reflecting the reduction in ambient NO, NO_x, ROG, and ozone concentrations expected as a direct consequence of the AQMP or WSPA Alternative plans. Indeed, the purpose of both plans is to reduce these contaminant levels.

G-128

- The 48-hour residence time assumption in the PM-10 modeling methodology misrepresents source-receptor relationships under low wind episodes in the basin. Since mass may be lost artificially from the basin because it is only retained in the model for 48 hours, detailed analysis of this procedure is needed.

G-125

The annual average PM10 source apportionment was NOT based on an average of apportionments for two months. The apportionment of annual average PM10 into the sources responsible was made using ambient air quality data and results of CMB receptor modeling, for which an analysis was performed for all of the sample days (nominally 60 per year). This resulted in an annual average design value of nitrates which, in effect, represents the secondary nitrate particulate matter that was observed in the ambient air on an annual basis.

Following the CMB effort, the secondary nitrate source was divided into individual NO_x source types based on the fractions of nitrate from the dispersion model. This fractionization of the nitrates (annual average obtained from observations) was done using dispersion model results for July and December, 1985. The absolute nitrate concentration may vary from month to month, due mostly to meteorological effects, but the fraction contributed from each individual source type varies very little between months (in the same season). This was observed during the testing phase of model development, so the effect on annual average fractionization of nitrates into source types is expected to be minor.

G-126

Annual average PM10 modeling results were NOT used to characterize worst-case 24-hour average impacts. The chemical composition for the peak 24-hour PM10 event was obtained directly from observed species concentrations. The directly emitted particulate matter was apportioned using CMB receptor modeling results applied to the data associated with that specific event. The resulting nitrate and sulfate concentrations, which represent the observed levels of these species on the peak 24-hour PM10 event, were then apportioned into NO_x and SO_x emission source types based on annual average dispersion model results.

000584

- G-124
- Due to the uniqueness of the Rubidoux site in the SOGAB, strategies designed to reduce PM-10 at Rubidoux (e.g., reducing blowing dust and ammonia) may be ineffective at other sites, such as Downtown Los Angeles, where carbonaceous material and nitrate are major components.

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- The 48-hour residence time assumption in the PM-10 modeling methodology misrepresents source-receptor relationships under low wind episodes in the basin. Since mass may be lost artificially from the basin because it is only retained in the model for 48 hours, detailed analysis of this procedure is needed.

The annual average PM10 dispersion model is not designed to predict concentrations for specific 24-hour periods. Lacking a short-term episodic model for sulfates and nitrates which could be employed during the AQMP process, the fractions from the annual model were used to apportion the 24-hour average nitrate and sulfate into source types. This assumption leads to some uncertainty but was clearly the only alternative available and it is believed that this method of fractionization is a reasonable approximation.

- G-127
- An examination of the effects of future air quality reductions on the nitrate formation rate has been performed by the District. The sensitivity analysis indicates that the effect is relatively small. See the response for comment A-2. (Attachment A, Jan. 30 WSPA comments).

The preliminary assessment of this effect performed for WSPA contains many interesting findings, some of which confirm the fact that the effect on model results is minor, and others which appear to contradict the notion that less NO_x control will be required due to a lowering of the nitrate transformation rate. In addition, the technical approach used for this investigation is not appropriate.

1. The Photochemical Box Model (PBM) was used to model ozone, NO_x and ROG concentrations for the 7-9 August, 1984 ozone episode. It is stated that comparisons between the PBM and the UAM model predictions "indicate generally good correspondence between ozone, NO_x, and ROG predictions, given the differences in the model formulations. See Figure 2-1." Careful examination of the plots in Figure 2-1 does not indicate a good agreement for NO_x and ozone, however.

NO_x concentrations predicted by PBM between 10 and 22 hours are very low, near the horizontal axis (zero) for most of the hours and then rise to about 0.5 pphm. During this time period, UAM predicts NO_x concentrations between about 1 and 2 pphm. Since it is the ratios of ROG to NO_x and NO to NO_x which are used in the transformation rate calculation in the PM10 model, the PBM results will lead to large errors.

- G-124
- Due to the uniqueness of the Rubidoux site in the SOGAB, strategies designed to reduce PM-10 at Rubidoux (e.g., reducing blowing dust and ammonia) may be ineffective at other sites, such as Downtown Los Angeles, where carbonaceous material and nitrate are major components.

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- Failure to account for future year air quality reductions in the PM-10 modeling leads to an overprediction of inorganic nitrate concentration in the District's 24-hour and annual average PM-10 calculations. The year 2010 impact calculations need to be repeated, reflecting the reduction in ambient NO, NO_x, ROG, and ozone concentrations expected as a direct consequence of the AQMP or WSPA Alternative plans. Indeed, the purpose of both plans is to reduce these contaminant levels.
- G-128
- The 48-hour residence time assumption in the PM-10 modeling methodology misrepresents source-receptor relationships under low wind episodes in the basin. Since mass may be lost artificially from the basin because it is only retained in the model for 48 hours, detailed analysis of this procedure is needed.

The ozone concentrations do not agree in quantity, as well as direction, between the PBM and UAM predictions. Whereas ozone concentrations are predicted by PBM to be rising to a peak and then leveling off between 9 and 22 hours, the UAM model predicts a peak at 13 hours and then a dramatic decrease after about 15 hours. The differences between the ozone concentration predictions at hours 19 to 22 are large. For example, PBM peaks at hour 20 with an ozone concentration above 15.5 pphm, whereas UAM predicts the ozone level to be less than about 6.5 pphm during this hour.

It is generally agreed upon in the modeling community that the PBM model is not considered to be a good predictor for ozone concentrations in the South Coast Air Basin.

2. The nitrate formation potential computed by WSPA for 1985 and 2010 air quality (Figures 2-2 and 2-3) indicate that the formation rate is very similar for almost all hours except for some afternoon hours, particularly on August 9. The conditions during the afternoon of 9 August 1984 are not typical and hence, only affect a few hours during high ozone episodes. The PM10 dispersion model was used to predict long-term pollutant concentrations (monthly and annual averages) and is therefore not very sensitive to the effect of altering ozone concentrations, which are typically high during only a small fraction of the modeled hours.

The effect of future air quality on nitrate formation potential has been determined to be minor through sensitivity analyses of the dispersion model which was described in the response for comment A-2 (Attachment A, Jan 30, 1989, WSPA comments).

3. A sensitivity analysis was performed by WSPA to determine the effect of air quality changes on the nitrate formation rate as computed in the PM10 model.

As stated on page 2-14 of Attachment B: "Variations of ROG concentrations by ± 20 percent seem to have little effect..." This was concluded by WSPA after examination of Figure 2-4 (c)

00056

- G-124
- Due to the uniqueness of the Rubidoux site in the SOGAB, strategies designed to reduce PM-10 at Rubidoux (e.g., reducing blowing dust and ammonia) may be ineffective at other sites, such as Downtown Los Angeles, where carbonaceous material and nitrate are major components.

PM-10 Modeling Methods.

- G-125
- The adequacy of representing the annual average PM-10 impacts by the arithmetic average of a summer month and a winter month is unsubstantiated; this simplification warrants detailed investigation.

- G-126
- The adequacy of using annual average PM-10 modeling results to characterize worst-case 24-hour average impacts is unproven. Model evaluation exercises are needed for both the annual average and 24-hour averages, using the 1985 data.

- G-127
- Failure to account for future year air quality reductions in the PM-10 modeling leads to an overprediction of inorganic nitrate concentration in the District's 24-hour and annual average PM-10 calculations. The year 2010 impact calculations need to be repeated, reflecting the reduction in ambient NO, NO_x, ROG, and ozone concentrations expected as a direct consequence of the AQMP or WSPA Alternative plans. Indeed, the purpose of both plans is to reduce these contaminant levels.

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which displays the sensitivity of the nitrate formation rate constant to changes in ROG concentrations. This observation appears to contradict WSPA's claim that reductions of ROG concentrations will have a large effect on nitrate formation. It supports the assumption made by the District that the effect is small and hence can be ignored.

Examination of Figure 2-4 (b), showing the sensitivity of the nitrate formation rate due to changes in NO_x concentration, reveals an interesting finding. When the ambient NO_x concentration is reduced, the nitrate formation rate constant is higher. This effect can be explained by chemical kinetic theory. It doesn't mean that more nitrate is formed if there is less NO_x, but that the rate is higher per molecule of NO_x (the rate constant is multiplied by the NO_x concentration to achieve overall nitrate formation.) That means that the probability for each molecule of NO_x to transform into a nitrate particle is greater when less NO_x molecules are present. This contradicts the idea that reducing levels of ambient pollutants will lead to a slower formation potential and an overprediction of nitrate concentrations in 2010. This is an indication that additional NO_x reductions may be required beyond the level predicted by the District.

After a discussion of these sensitivity test results, WSPA concludes: "These results indicate that the inorganic nitrate formation rate used in the District's PM10 modeling overpredicts the actual rate." In light of the above observations concerning the sensitivity of the nitrate formation rate due to changes in ambient ROG and NO_x levels, this conclusion does not appear to follow.

In summary, UAM applied to the South Coast Air Basin should only be used at the present time for ozone impact analysis. The model performance for NO₂ impacts was much worse than that for ozone and is not adequate for regulatory application. The use of UAM for nitrate predictions is even more questionable. WSPA's approach of using PBM to predict hourly ozone, NO_x, ROG, and nitrate concentrations everywhere in the Basin for an entire year is very ambitious.

RADIAN

G-124

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G-128

- The 48-hour residence time assumption in the PM-10 modeling methodology misrepresents source-receptor relationships under low wind episodes in the basin. Since mass may be lost artificially from the basin because it is only retained in the model for 48 hours, detailed analysis of this procedure is needed.

The rationale of using PBM is based on a purported correspondence of ozone, ROG, and NO_x predictions between UAM and PBM during a three day ozone episode. No evidence of the validation of the UAM results for this episode are given, and the professed correspondence does not appear to exist. WSPA's PBM sensitivity results actually indicate that (1) ROG control will not change the nitrate conversion rates, and (2) additional NO_x control may be needed to achieve the proportional reduction in nitrate concentrations as estimated by the District.

G-128

The dispersion model used to predict annual average nitrate and sulfate source contribution fractions was originally formulated and applied at the Environmental Quality Laboratory at the California Institute of Technology. The model was first used by Cass (EQL report no. 16, 1980) to predict sulfate concentrations and then by Gray (EQL report no. 23, 1986) for fine carbonaceous particles. During the development phase for both of these studies, the residence-time was examined to determine its sensitivity toward model predictions.

Trajectories were computed using three years of hourly averaged wind data to evaluate the number of air parcels which remain on the modeling grid after a specific number of hours. It was observed that over 95% of the air parcels (each representing a pollutant-laden air parcel) originating at major source locations within the Basin will be outside the modeling grid after 48 hours.

Cass (1980) noted that:

"...this selection does not mean that 5% of the material contributing to observed ...concentrations has been neglected. That is because when selecting a value for r_c [trajectory integration time] we focused only on the oldest air parcels in the airshed for any assumed value of r_c . The retention of air parcels of all ages r_c or less is given by the area under the curve [relating the percentage of trajectory end points of age r_c still within the grid to the trajectory integration time, r_c]. By truncating the trajectory integration at $r_{95} \approx r_c$, we have removed an amount of pollutant mass approximately equal to

000508

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the area of the tail of that declining curve beyond $\tau_{95}\%$ equals two days."

Note that the dispersion model has been used to predict long-term (monthly average) pollutant concentrations and is not designed to accurately predict concentrations during a specific 24-hour period. Mass is artificially "lost" from the modeling region due to the 48-hour cutoff during extreme stagnation conditions, however in the long-term, for which this model is designed, the loss is very small.

The model was, in fact, executed using trajectory retention times less than 48 hours (in order to reduce the computer time required) during testing of the model. This resulted in only a minor reduction in monthly averaged concentration predictions.

000589

- G-129
- The assumption that the mixing height does not vary spatially in the basin is clearly simplistic and directly affects PM-10 predictions; the effects of this simplifying assumption on model overprediction needs to be quantified.

Primary Particulate Control Options.

- G-130
- Preliminary indications from literature reviews are that emissions from some fugitive dust source categories may be reduced by as much as 70-80 percent by practices such as revegetation, soil covers, landscaping, street sweeping, tire washing, and other control measures.

Public Health Impacts.

- G-131
- Changes in PM-10 concentration and composition are expected to occur as the result of differences between the SCAQMD and WSPA plans. A means of quantifying the differences in public health impacts between the two plans is needed.
- G-132
- The available data on health effects of PM-10 is of limited usefulness in defining differences in public health impacts between the two plans. The classical measures of atmospheric particulate matter do not differentiate between particulates of different composition, although it is likely that composition is a major determinant of toxicity.
- G-133
- Available modeling results suggest that the primary difference between the two plans will be in the nitrate composition of PM-10. The available toxicology data on inorganic nitrates [both nitric acid and nitrate salts (principally NH_4NO_3)], although limited, is sufficient to provide some measure of differences in public health impacts that will be meaningful for the type of particulate matter found in the SOCAB.

G-129

The PM10 dispersion model employs a 245 x 100 km grid system comprised of 5 x 5 km grid cells. This grid resolution is used for all emission sources, horizontal transport vectors, and vertical profile calculations. The air quality data, used only for purposes of computing secondary particle chemical transformation rates, was averaged over "neighborhoods" of 5 cells x 5 cells. It is important to note that this data is extrapolated from a limited number of receptors (District monitoring sites.) Actual meteorological and air quality data is unavailable in most of the 900 grid cells. Therefore, smoothing of the data will have little effect on model results.

Deposition velocities were computed (based on wind speed, surface roughness, etc.) for each of the 900 grid cells and then averaged across the 5 cell x 5 cell "neighborhoods." Water concentrations, not relative humidities, are used in the chemical transformation rate calculation. These water concentrations have also been computed at each of the 900 grid cells before being averaged.

Inversion height is assumed to be uniform throughout the Basin at any given time. This assumption is not considered to deviate far from true conditions, especially in the western part of the air Basin (see Cass, EQL report no. 16, California Institute of Technology, 1980). However, this assumption has absolutely NO effect on the model results, given the manner in which those results were used for AQMP purposes. If the mixing height is actually higher than modeled, then total concentrations of nitrate and sulfate would be over predicted, since the mixing height is a direct scale factor. The fractional contribution from each source type would be unaffected, though. It is precisely these fractional contributions to nitrate and sulfate concentrations computed by the model, which were used in the AQMP.

G-130

The District has evaluated numerous measures and has used its best judgement to assess the feasibility and control effectiveness of the controls identified in the AQMP.

The investigation performed by WSPA is in the preliminary stage, and as stated, "...no findings can be reported." If future research reveals

G-129

- The assumption that the mixing height does not vary spatially in the basin is clearly simplistic and directly affects PM-10 predictions; the effects of this simplifying assumption on model overprediction needs to be quantified.

potential further primary PM10 controls, these will be considered at that time.

Primary Particulate Control Options.

G-130

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District staff does not plan future control strategies based on an "initial impression" as used in WSPA comments.

- G-131
- It is recognized that different air pollution control strategies may affect the concentration and composition of ambient PM_{10} in the Basin. However, attempts to quantify differences in health impact based upon composition changes would rather speculative given the PM_{10} health effects data which is currently available. In setting the PM_{10} standards, EPA recognized that there were regional differences in the composition of PM_{10} , however, they maintained that the standards should apply to a variety of aerosol compositions.

- G-132
- The comment is noted.

- G-133
- PM_{10} , as a pollutant category, is a complex mixture of compounds. In addition, individual particles within this category may also be composed of complex mixtures. Laboratory experiments in which pure substances, such as inorganic nitrates, are tested for short periods of time may not be relevant to the assessment of potential health effects of the complex urban aerosol to which people are exposed in Los Angeles. In setting the PM_{10} , however, they maintained that the standards should apply to a variety of aerosol compositions. Given the complex composition of particulates in the urban aerosol, and the nature of the available epidemiological data, it appears unlikely that the approach outlined will be able to quantitatively separate out the health effects due to one or more specific components of PM_{10} .

G-134

- Several possible measures of public health impact due to PM-10 nitrate will be evaluated and integrated with the modeled atmospheric concentration of PM-10 nitrate and demographic information on the SOCAR to quantify health risk.

G-134

As noted in the previous response, given the complex composition of particulates in the urban aerosol, and the nature of the available epidemiological data, it appears unlikely that the approach outlined will be able to quantitatively separate out the health effects due to one or more specific components of PM₁₀.

RESPONSE TO COMMENTS ON THE SOCIO-ECONOMIC IMPACTS
OF THE AIR QUALITY MANAGEMENT PLAN

APPENDIX F

GENERAL COMMENTS

- G-135 A. The introduction to Appendix F indicates that public comments have called for a more thorough analysis of the economic and social impacts of the Plan and indicates that this appendix is a brief summary of findings. It is unclear whether more thorough analysis is being conducted beyond this Appendix. Given the severity of Tier I control measures not included in this analysis, further analysis is warranted.*
- B. As it stands, this appendix is insufficient in evaluating the socio-economic impacts of the Plan. While the input-output analysis is valid and legitimate methodology for calculating estimated impacts, the Appendix admits that this analysis is not complete even for Tier I controls, and presents findings as:
- "estimates of the changes in output and employment in the year 2010 that might result from implementation of the Tier I measures,"
- G-136 and,
- "an indication of the benefits that could be achieved from full implementation of the AQMP."
- [emphasis added]
- A more determinant quantification of the costs and benefits is required.*
- G-137 C. The brief socio-economic analysis in this Appendix highlights the most contentious assumptions of the Plan and incorporates them into the analysis as given. No sensitivity analysis appears to have been done and this analysis ignores earlier comments that called for more thorough analysis and questioned the validity of the assumptions and effectiveness of the control measures. This analysis only quantifies what are already highly contentious assumptions about the impacts of the Plan and does nothing to support or defend these assumptions.*
- G-138 D. Economic analysis concentrates on the control measures and resulting impacts that will exist by the year 2010, but does not address the many control measures and impacts that will take effect before then in an iterative manner. Many of these earlier impacts will decrease the effectiveness and need for the later control measures.*
- G-139 E. This analysis admits that all of the Tier I controls are not evaluated, but does not indicate which ones were considered.

G-135

Appendix F is a summary of the findings of a study performed for SCAG and SCAQMD by the University of Southern California School of Architecture and Urban Planning. A more detailed account of the methodology and assumption used for the study is contained in the Economic and Social Impacts of the Air Quality Management Plan, the Regional Mobility Plan and the Growth Management Plan. Further analysis of the costs of individual control measures and their socioeconomic impacts will be conducted during rule development.

G-136

Appendix F evaluates the socioeconomic impacts quantifiable control costs and their associated impacts beyond Tier I would be speculative because the technology for Tiers II and III has yet to be developed and commercialized. The knowledge of air pollution control benefits warrants the assessment of those accrued to the entire plan. More detailed assessments of Tiers II and III will be developed during rule development.

References to specific "contentious assumptions" and to specific "earlier comments" are required in order to respond. Assumptions used for specific control measures will be examined during the rule development process.

Since implementation of the Plan's control measures will be phased-in over the Plan's twenty-year time span, socioeconomic impacts during the phase-in period will not be as severe as when all controls are implemented in 2010. If earlier control measures decrease the need for later ones by achieving the federal air quality standards earlier than anticipated, implementation of the later control measures will be re-evaluated. If earlier control measures decrease the effectiveness of later ones, the need for additional control measures will be re-evaluated. The Plan will be continually re-evaluated and revised as necessary on a biennial basis.

Control measures included in the analysis were whose costs are estimated in Appendix IV-A. Cost Analysis will be performed for each control measure during the rule-making process.

RESPONSE TO COMMENTS ON THE SOCIO-ECONOMIC IMPACTS
OF THE AIR QUALITY MANAGEMENT PLAN

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- G-139 E. This analysis admits that all of the Tier I controls are not evaluated, but does not indicate which ones were considered.

"The report" referred to on page F-1 is the study conducted by the School of Architecture and Urban Planning of University of Southern California on the AQMP's socioeconomic impacts. This study has been completed and its results are summarized in Appendix F. Refer to the response for comment G-135.

G-137 References to specific "contentious assumptions" and to specific "earlier comments" are required in order to respond. Assumptions used for specific control measures will be examined during the rule development process.

G-138 Since implementation of the Plan's control measures will be phased-in over the Plan's twenty-year time span, socioeconomic impacts during the phase-in period will not be as severe as when all controls are implemented in 2010. If earlier control measures decrease the need for later ones by achieving the federal air quality standards earlier than anticipated, implementation of the later control measures will be re-evaluated. If earlier control measures decrease the effectiveness of later ones, the need for additional control measures will be re-evaluated. The Plan will be continually re-evaluated and revised as necessary on a biennial basis.

G-139 Control measures included in the analysis were those whose costs are estimated in Appendix IV-A. Cost analysis will be performed for each control measure during the rule-making process.

Further, it does not attempt to address even qualitatively the potential impacts of measures not considered in the analysis. The number of control measures on which the analysis is based should be specified.*

SPECIFIC COMMENTS

Purpose

G-140 p. F-1 This section refers to "the report," and the preliminary analysis that it is supposed to provide. It is unclear, however, the report to which reference is made. It is also unclear whether this Appendix is an in-process piece of analysis or whether it is to be considered the sole piece of socio-economic analysis upon which the impacts of the FEIR and AQMP will be judged. If further analysis is to be submitted in support of the plan, the results would require further public comment and response. If further analysis is not to be submitted, the results of this analysis cannot at this time be considered adequate for meeting the requirements of CEQA for the final environmental impact report.*

p. F-1 This section belittles the severity of the Plan and its potential impacts, noting that:

"Since this is a short term study the actual scope of the study is only a partial analysis which gives indications of the types of economic impacts that might be experienced by different industries, occupations, and different parts of the region."

G-141 Because of the severity of the Plan's potential impacts, a more complete and rigorous attempt to estimate the nature of impacts is warranted. Many of the potential impacts have been ignored under the auspices of CEQA not requiring full socio-economic impact analysis. CEQA does, however, require consideration of impacts that cause changes to the physical environment. We believe that many of the impacts fall under this classification and meet this requirement for consideration.*

Approach

G-142 p. F-2 The use of an input-output model is a valid application for this Plan. However, an input-output model tends to be pareto-static with respect to a given set of assumptions. It is important that the model also be applied to alternative sets of assumptions to account for the dynamic changes in impacts (e.g., regarding effectiveness of control measures) associated with entities leaving the region and being unable or unwilling to meet the control measures.*

G-143 p. F-2 The last paragraph of page F-2 indicates this study does not cover all the measures in the AQMP, and that it only covers those measures

G-140 "The report" referred to on page F-1 is the study conducted by the School of Architecture and Urban Planning of University of Southern California on the AQMP's socioeconomic impacts. This study has been completed and its results are summarized in Appendix F. Refer to the response for comment G-135.

G-141 Specific identification of which changes to the physical environment would result from the AQMP's economic impacts is needed before a response can be made. The December, 1988 EIR analyzes physical environmental impacts resulting from the Plan's economic impacts.

G-142 Your comment is noted and will be forwarded to the District Board for consideration in their decision on the adoption of the AQMP. Business relocation and feasibility of control measures will be evaluated in the rule-making process.

G-143 Your comment is noted. Page 4 state specifically why not all of the Tier I impacts are accounted for: 1) not all Tier I control measures have costs estimated for them and 2) it is not know "whether different sectors of the region's economy have the technological capacity and willingness to absorb the control cost.

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- included in the Tier I category, so for this reason it is incomplete. However, further in the document (page F-4), the study reports it does not even fully account for all the potential impacts of the Tier I control measures. If the approach in fact does not address all the impacts of Tier I controls, it should be stated as such on page F-2.*
- G-144 p.F-2 Because, as the Plan admits, only a portion of the economic and social impacts have been covered by this analysis, adoption of the Plan should not be considered until analysis of all impacts has been conducted, at least for the Tier I control measures. It is very misleading and inappropriate to consider Plan adoption without quantifying the full range of reasonable and expected economic and social impacts.*
- G-145 Assumptions
- p.F-3 Assumptions used in analyzing economic and social impacts are laid out on page F-3 to legitimize the analysis. Review of these assumptions indicate that this social and economic analysis is based upon highly questionable and contentious assumptions not adequately supported in the Plan or the FEIR. As noted in previous comments, the assumptions (1 through 3 on page F-3) regarding population, employment, cost estimates, and benefits are not realistic. More realistic or scaled back projections of the effectiveness of these control measures and level of cooperation should be considered as alternative inputs to the analysis.*
- G-146 p.F-3 Assumption 4 (that industries have the technological capacity and willingness to absorb the control costs and that no firms evade the controls by leaving the region) and assumption 5 (that all control costs are passed through from businesses to their customers in the form of higher prices) are egregious assumptions in this analysis. The Final EIR, admits that these assumptions may not hold true. As noted in previous comments, these assumptions are in conflict with basic economic theory concerning the operation of local and regional economies. As noted in our comments, many firms do not currently have the technological capacity or willingness to absorb control costs. Firms are currently leaving the region because they cannot compete with firms in outside markets. Other firms are closing and many will close because consumers will not accept pass through of costs. The only way that such assumptions can hold true is if no firm within the region competes in any other market outside the region and no firms outside the region import products manufactured outside the region for sale in this region.*
- G-147 p.F-3 Because the model does not account for several specific impacts of great concern, the analysis should be expanded to include alternative assumptions that reflect these considerations. Because of the nature of input-output modeling, it is necessary to model separate sets of assumptions about the technological ability of firms to absorb these costs. It must also be considered that the regional economy is not a closed economy and it must interact with
- G-144 Your comment is noted and will be forwarded to the District Board for consideration in their decision on the adoption of the AQMP. Refer to the response for comment G-136.
- G-145 More detailed references to unrealistic projections of population, employment, cost estimates and benefits are needed before responses can be made.
- G-146 Refer to the response for comment G-142. The air pollution regulation is the sole factor determining the location of a business. The condition for the assumptions to hold true that "no firms outside the region import products manufactured outside the region for sale in this region" is unclear.
- G-147 Refer for comment G-135. Regional purchase coefficients used in the study provide linkage between this Basin's economy and other economies.

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surrounding areas. Relaxing this assumption would produce drastically different estimates, and therefore, at least some form of sensitivity analysis should be conducted varying this and other contentious assumptions to highlight the sensitivity of the Plan to these assumptions.*

p F-4

It is noted on page F-4 that

G-148

"the approach that has been used is still very limited and does not fully take into account all the potential impacts of the Tier I control measures. Costs are not available for all of the control measures. In addition, the results do not take into account whether the different sectors of the region's economy have the technological capacity and willingness to absorb the control costs. For these reasons the control costs for even these Tier I measures are understated."

This clearly lays out and admits the problems with this study, but no further analysis is suggested or indicated that will solve these deficiencies. By admission, this study is not adequate or appropriate for estimating the impacts of the Tier I control measures, not even as a lower bound, due to the omission of some Tier I control measures. The controls for which cost information was not available should be indicated within this analysis. It is not clear whether this analysis covers many of the Tier I control measures or few, and whether the ones that are considered in this analysis are the major and far reaching controls or the smaller, less contentious controls.*

p F-4

G-149

It is unclear what the figures in Table 1 mean. If 65 percent of the offset spending of \$2.9 billion caused by the Plan is a result of direct capital expenditure, as noted in assumption 7 on page F-3 then associated employment increases will likely be less than projected.*

p F-4

G-150

Table 1 indicates that the gross impact of the Tier I stationary source control measures will be a loss of \$8.5 billion and 46,000 jobs. This converts into one lost job (gross impact, not accounting for shifts to new jobs) for every \$184,782 of lost output. The net impact of the Tier I stationary source control measures is estimated as a \$5.6 billion less in output and 16,400 lost jobs. This impact amounts to only one job lost per \$341,463 loss in output. It seems extremely unreal that so few jobs in net would be affected by such great changes in output. Some explanation and support for these conclusions should be provided.*

G-148

Your comment is noted and will be forwarded to the District Board for consideration in their decision on the adoption of the AQMP. The Tier I control measures included in the study were all those having cost estimates presented in Appendix IV-A.

G-149

The employment figure of 29,600 jobs for "Offset Spending" in Table 1 were calculated using the assumption that 65 percent of the \$2.9 billion in pollution control spending would be for capital equipment and 35 percent would be for installation. The 29,600 jobs are the sum of the jobs created by in-Basin manufacturing of the pollution control equipment and its installation.

G-150

The employment and output estimates presented are results of the input-output model used in the analysis. Employment-to-output ratios calculated from these results depend on the labor intensities of affected industries. For example, the labor intensity of installation activities create more jobs per dollar of output than do manufacturing activities.

000598

Growth Management Plan

p.F-5 Page F-5 notes that:

G-151

"the analysis of the Growth Management Plan has concentrated on the commuting and other trips that result from the improved job/housing balance in the growth Plan. The analysis does not include an analysis of the economic impacts on businesses from actual locational differences."

The aforementioned business impacts have potentially large and serious economic and social impacts that should be addressed in the Plan. As this section notes, these concerns still have not been addressed, and this deficiency should be rectified. Further, this analysis seems to assume full effectiveness of the control measures as they are set forth in the Plan. As noted in prior comments, these control measures are largely unenforceable and require the voluntary actions of communities to enforce policies that are not in their own best interests. The FEIR offers no explanation as to how these communities will be induced to act. For these reasons, it is not appropriate to assume full effectiveness of these control measures.*

Regional Mobility Plan

G-152

p.F-6 Page F-6 notes that "there are a variety of transportation impacts that have been analyzed," but does not offer alternatives with varying success rates of these impacts. As noted in previous comments, the assumed effectiveness of many of these control measures is highly questionable.*

G-153

p F-6 This section seems to assume that large cost savings will result directly from fewer traveled miles and relief from congestion due to the control measures, and that these savings will be diverted to other economic activities. The assumption that the marginal savings in travel time will both be significant and convertible into real investment in other output producing activities is neither supported nor likely. Supporting evidence for these assertions should be provided and the impacts quantified. It is highly likely that these marginal savings would be absorbed into applications that do not have direct market benefits. It is likely, therefore, that these benefits are overstated in the analysis.*

Tax Impacts

G-154

The consideration of tax impacts are not appropriate as either a cost or benefit of the proposed Plan. Changes in taxes as a result of the control measures are economic transfers to/from the governments and not real gains/losses of economic value. Shifts in the value of taxed goods/activities have been already accounted for

G-151

Your comment is noted and will be forwarded to the District Board for consideration in their decision on the adoption of the AQMP. To estimate effects of partial implementation of the plan would be speculative. Moreover, partial implementation of the plan would not achieve attainment of the federal air quality standards. A task force on implementation of the Plan by local governments will be established to resolve implementation issues. Though the Plan's implementation will impose costs on local governments, the failure to attain the federal clean air standards has the potential to impose even greater costs, resulting from federal sanctions on the Basin and loss of federal funding for major public capital improvements.

G-152

Your comment is noted and will be forwarded to the District Board for consideration in their decision on the adoption of the AQMP. To estimate effects of partial implementation of the plan would be speculative. Moreover, partial implementation of the plan would not achieve attainment of the federal air quality standards.

G-153

Your comment is noted and will be forwarded to the District Board for consideration in their decision on the adoption of the AQMP. Just as the cost of control measures result in increased product prices, reduction in transportation costs to business are reflected in lower product prices and/or higher profits.

G-154

Tax impacts are not included with other impacts analyzed to yield a net impact. Tax impacts are simply another dimension of the overall impacts report in Appendix F. Therefore, tax impacts are not double-counted in the analysis.

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665000

in the measurement of the costs/benefits of the control measures. Inclusion of taxes as a cost/benefit, therefore, results in double-counting. Changes in taxes are a valid consideration only as an equity/distribution issue.*

p F-7 It is not clear in this analysis how reductions in congestion will result in lower prices for goods and increased sales of goods and what the magnitude of these impacts. Evidence to support these assertions and to quantify the impacts should be included in the analysis. It is likely that any such price impacts may be trivial.

Future Work Program

This section notes that:

"because of data, time and resource constraints it has not been possible to present a comprehensive analysis of the economic and social impacts of the plans."

Because of these constraints, this analysis does not respond to public comments that a comprehensive analysis of the socio-economic impacts be undertaken. Further, this section notes that impacts not included in this analysis include jobs-housing balance, AQMP control costs (such as for off-road vehicles, Tier I Mobile Source Controls, Post-1987 Motor Vehicle Plan, and Tier II and III control measures), spatial impacts of the Regional Mobility Plan, social impacts, alternative work schedules, and phasing of the Plan. These impacts are among some of the most contentious of the Plan. Their omission makes it impossible to understand the overall impacts of the Plan and the potential for the Plan to alter the physical environment of the region.

Occupational Impacts by Ethnic Group

Overall, occupational impacts by ethnic group is by far one of the most important distributional questions concerning the impacts of the Plan. Occupational impacts, as presented in this analysis, is highly misleading given the lack of sophistication of the methodology and the data entered for analysis. The fourth paragraph of page F-9 notes with respect to the analysis that in 2010

"the net losses by ethnic group appear to be proportional to the group's representation in the labor force."

This conclusion, however, does not result from any analysis, but rather directly from the assumption, as noted in paragraph three of page F-9 that:

G-155 Table 3 provides dollars estimates of delay savings to business from greater mobility of business travel and transport. Reduced transportation costs reduce product prices just as any other production costs savings.

G-156 Your comment is noted and will be forwarded to the District Board for consideration in their decision on the adoption of the AQMP. Refer also the response for comment G-136.

G-157 The SCAG/USC socioeconomic study (Appendix F) provides an initial assessment of the impact that the AQMP may have on new employment opportunities for each of the major ethnic groups in the region. Tables 1 and 2 estimate the potential impacts of three parts of the AQMP, namely: Tier I District measures, and Tiers I and II Growth Management and Mobility Measures. The study does not include an assessment of: ARB/State Mobile Sources Measures, EPA/Federal measures and Tiers II and III future technology measures for stationary sources.

The study is built in the Growth forecast which was adopted by SCAG in February 1989. The forecast calls for a regional increase of 3,030,000 jobs. The socioeconomic study assesses the plus or minus delta impact that the AQMP will have on this future job growth. The net result of this study indicates that the region may see a cumulative increase of 80,200 jobs, above the 3,030,000 level. The subtitles in Tables 1 and 2 (from Appendix F) have been revised to clarify the cumulative relationship between each part of the AQMP.

in the measurement of the costs/benefits of the control measures. Inclusion of taxes as a cost/benefit, therefore, results in double-counting. Changes in taxes are a valid consideration only as an equity/distribution issue.*

G-155

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G-156

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Occupational Impacts by Ethnic Group

G-157

p F-9 Overall, occupational impacts by ethnic group is by far one of the most important distributional questions concerning the impacts of the Plan. Occupational impacts, as presented in this analysis, is highly misleading given the lack of sophistication of the methodology and the data entered for analysis. The fourth paragraph of page F-9 notes with respect to the analysis that in 2010:

"the net losses by ethnic group appear to be proportional to the group's representation in the labor force."

This conclusion, however, does not result from any analysis, but rather directly from the assumption, as noted in paragraph three of page F-9 that:

TABLE I
EMPLOYMENT IMPACTS
FOR THE AQMP BY ETHNIC GROUP

| ETHNIC GROUP | TIER I STATIONARY | GROWTH MNGT | MOBILITY | AQMP |
|--------------|----------------------|----------------|----------|---------|
| WHITE | -7,285 | +43,733 | -15,095 | 21,353 |
| BLACK | -1,470 | +8,685 | -108 | +7,1072 |
| ASIAN/OTHER | -1,840 | +11,567 | -1,705 | +8,022 |
| HISPANIC | -5,905 | +34,815 | 14,808 | +43,718 |
| | -16,500 | +98,800 | -2,100 | +80,200 |

000601

in the measurement of the costs/benefits of the control measures. Inclusion of taxes as a cost/benefit, therefore, results in double-counting. Changes in taxes are a valid consideration only as an equity/distribution issue.*

It is not clear in this analysis how reductions in congestion will result in lower prices for goods and increased sales of goods and what the magnitude of these impacts. Evidence to support these assertions and to quantify the impacts should be included in the analysis. It is likely that any such price impacts may be trivial.

Future Work Program

This section notes that:

"because of data, time and resource constraints it has not been possible to present a comprehensive analysis of the economic and social impacts of the plans."

Because of these constraints, this analysis does not respond to public comments that a comprehensive analysis of the socio-economic impacts be undertaken. Further, this section notes that impacts not included in this analysis include jobs-housing balance, AQMP control costs (such as for off-road vehicles, Tier I Mobile Source Controls, Post-1987 Motor Vehicle Plan, and Tier II and III control measures), spatial impacts of the Regional Mobility Plan, social impacts, alternative work schedules, and phasing of the Plan. These impacts are among some of the most contentious of the Plan. Their omission makes it impossible to understand the overall impacts of the Plan and the potential for the Plan to alter the physical environment of the region.

Occupational Impacts by Ethnic Group

Overall, occupational impacts by ethnic group is by far one of the most important distributional questions concerning the impacts of the Plan. Occupational impacts, as presented in this analysis, is highly misleading given the lack of sophistication of the methodology and the data entered for analysis. The fourth paragraph of page F-9 notes with respect to the analysis that in 2010

"the net losses by ethnic group appear to be proportional to the group's representation in the labor force."

This conclusion, however, does not result from any analysis, but rather directly from the assumption, as noted in paragraph three of page F-9 that:

TABLE 2
OCCUPATIONAL IMPACTS BY ETHNIC GROUP
FOR THE AQMP

| OCCUAPTION | TEIR I STATIONARY | GROWTH MNGT | MOBILITY | AQMP |
|----------------------------|----------------------|----------------|----------|---------|
| MANAGE./PROF. | | | | |
| WHITE | -2,170 | +15,190 | -6,448 | +6,572 |
| BLACK | -245 | +1,715 | -728 | +792 |
| ASIAN/OTHER | -455 | +3,185 | -1,352 | +1,378 |
| HISPANIC | -630 | +4,4410 | -1,872 | +1,908 |
| TOTAL | -3,500 | +24,500 | -10,400 | +10,600 |
| TECH., SALES, ADMIN | | | | |
| WHITE | -2,550 | +12,750 | -16,400 | -6,200 |
| BLACK | -561 | +2,805 | -3,608 | -1,364 |
| ASIAN/OTHER | -561 | +2,805 | -3,608 | -1,364 |
| HISPANIC | -1,428 | +7,140 | -9,184 | -3,472 |
| TOTAL | -5,100 | +25,500 | -32,800 | -12,400 |
| SERVICE | | | | |
| WHITE | -1,302 | +10,695 | +4,247 | +13,640 |
| BLACK | -378 | +3,105 | +1,233 | +3,960 |
| ASIAN/OTHER | -546 | +4,485 | +1,781 | +5,720 |
| HISPANIC | -1,974 | +16,215 | +6,439 | +20,680 |
| TOTAL | -4,200 | +34,500 | +13,700 | +44,000 |
| MECH., CONST., MCH. OP | | | | |
| WHITE | -1,092 | +4,680 | -3,315 | +273 |
| BLACK | -196 | +840 | -595 | +49 |
| ASIAN/OTHER | -224 | +960 | -680 | +56 |
| HISPANIC | -1,288 | +5,520 | -3,910 | +322 |
| TOTAL | -2,800 | +12,000 | -8,500 | +700 |
| ASS., LAB., MTR. VEH. OPR. | | | | |
| WHITE | -171 | +418 | +6,821 | +7,068 |
| BLACK | -90 | +220 | +3,590 | +3,720 |
| ASIAN/OTHER | -54 | +132 | +2,154 | +2,232 |
| HISPANIC | -585 | +1,530 | +23,335 | +24,280 |
| TOTAL | -900 | +2,300 | +35,900 | 37,300 |
| | | | NET GAIN | +80,200 |

"projections of the 2010 distribution of occupations by ethnic groups do not exist. It was therefore necessary for analytical purposes to assume that the 1988 distribution of occupation by ethnic group would remain constant in 2010."

The section goes on further to note:

"In all likelihood, there would be considerable changes in the educational and training levels of the labor force which would have a significant impact on the occupational distribution by ethnic group."

Given these conclusions, a sincere and supported attempt at quantifying these impacts should be attempted.*

The reliability of any twenty year forecast is predicted on the validity of the underlying assumptions.

Your comment is correct in questioning the use of today's ethnic mix by occupational group to predict the mix 2010. However, today's mix is none the less a more reliable starting point for the analysis, than using an elaborate construct of what the future mix may or may not be. This comment is analogous to questioning whether or not the study should be based on the assumption that today's unemployment rate will be held constant through the next twenty years. Although fluctuations in the rate are inevitable, the use of today's factual base permits a more reliable assessment of the impact that the AQMP may have on the growth of future employment.

In order for the socioeconomic impacts of the AQMP to be assessed on a detailed basis, the District Board has authorized the development of a socioeconomic model. The action (taken in January 1989) commits the District to assessing the socioeconomic impacts of each proposed District measures. The model will assess the impact of each rule by: occupational unit, county and ethnic composition of the labor force. Similar analysis is recommended for measures in SCAG's Growth Management and Regional Mobility Plans.

January 27, 1989



Mr. Norton Younglove
Chairman
SCAQMD Board
9150 Flair Drive
El Monte, CA 91731

Dear Mr. Younglove:

California
Manufacturers
Association

Southern
California
Air
Quality
Alliance

The following are the comments of the California Manufacturers Association Southern California Air Quality Alliance (the Alliance) on the 1988 draft AQMP and the revised Draft Environmental Impact Report on the draft AQMP:

H-1 The South Coast Air Quality Management District and the Southern California Association of Governments are to be congratulated on their comprehensive, well organized 1988 draft Air Quality Management Plan. It is in every respect an outstanding effort by a regional air regulatory agency and a COG.

H-2 The Alliance has not taken a position on either the Southern California Edison or the Western States Petroleum Association alternative. We were impressed, however, by the evidence presented by those organizations on the potential near term health benefits and reduced social and economic costs of an ROG focused strategy.

H-2 Clearly, SCE and WSPA and the District approached their attainment goals from different perspectives and with different priorities. Simply stated, the SCE and WSPA strategies would first implement ROG measures to attain the ozone standard at the earliest possible date and then implement sufficient NOx measures to attain the PM-10 standard by 2007. These strategies assign greater importance to early ozone attainment than to early PM-10 attainment.

H-2 The District staff strategy would implement all available ROG and NOx measures in Tier I, which would assure PM-10 attainment. It would then implement additional ROG measures in Tiers II and III, derived from anticipated technological breakthroughs, to attain the ozone standard by 2007. This strategy assigns greater importance to early PM-10 attainment than to early ozone attainment.

H-3 The District staff made three assumptions in its PM-10 modeling which tend to increase the Nox reductions needed for PM-10 attainment. These assumptions may be invalid for the following reasons:

RESPONSES TO COMMENTS
CALIFORNIA MANUFACTURERS ASSOCIATION (1/27/89)
COMMENT LETTER H

- H-1 Thank you for your comment; it will be forwarded to the District Board for consideration in making its decision on the AQMP.
- H-2 Please see Attachment 1 which discusses the alternatives to the AQMP, and Attachment 2 which addresses the ROG/NOx issue specifically. Please refer also to the response for comment DD-5.
- H-3 This is not correct. PM₁₀ modeling does not use population (growth or decline) as an assumption in the PM₁₀ model. Please refer to the response for comment DD-5 and attachments A and B which address the PM₁₀ issue.

000604

Assumption: Primary particulate emissions in the eastern part of the basin will increase as a result of projected population growth.

H-3
cont

Comment: Based on particulate readings taken in the San Gabriel Valley over the past twenty years, primary particulate emissions actually decrease with increases in population. This probably occurs because a greater amount of the earth is covered with concrete in heavily populated areas.

Assumption: Primary particulate emissions can be controlled by only 25%.

H-4

Comment: Studies conducted in the State of Washington indicate that primary particulates emissions can be controlled cost effectively by 60% or higher. One example is the use of a vacuum instead of a sweeper for road cleaning.

Assumption: The design value used by the District for PM-10 attainment modeling is the maximum PM-10 concentration measured at Rubidoux.

H-5

Comment: A high percentage of the Rubidoux particulate loading is ammonia nitrates generated by ammonia emissions from the feed lots in the upwind Chino area. Many of these lots will be replaced by housing tracts over the next twenty years.

Driven by these assumptions and other uncertainties about the sources of PM-10, the District strategy calls for an 80% reduction in NOx emissions from the 1985 emission baseline to attain the PM-10 standard. This level of NOx reduction in turn establishes the need for an 80% reduction in ROG to attain the ozone standard by 2007.

H-6

By attacking the ozone problem first with primarily ROG reductions and then adding NOx reductions to attain the PM-10 standard, the SCE strategy should attain the ozone standard at most locations five years earlier than the District strategy with only a 64% ROG reduction and a 20% NOx reduction; the WSPA strategy should also attain the ozone standard earlier than the District strategy with only a 65% ROG reduction and a 30% NOx reduction.

Using the District's assumptions on PM-10 formation and control efficiencies, the SCE strategy will attain the PM-10 standard at all stations except for five days at the Rubidoux station. Using the SCE assumptions on PM-10 formation and control efficiencies, the SCE strategy will attain the PM-10 standard by the same 2007 date as the District strategy. According to SCE data, its strategy should attain

H-4

The District has evaluated numerous control measures and has used its best judgment to assess the feasibility and control effectiveness of the controls identified in the AQMP.

The District is unable to evaluate your comment unless the study you site is made available for staff to review.

If future research reveals potential further primary PM₁₀ controls, these will be considered at that time.

H-5

It is not acceptable to the District to consider reduction of ammonia emissions, which will cause some reduction in secondary particle formation and therefore PM₁₀ concentrations, as a "control" for PM₁₀. The trade-off between nitrate and other nitrogen containing compounds (nitric acid, PAN, etc.) is NOT acceptable. The overall air quality must be considered whether standards exist or not. It is far better to remove the precursors of these harmful nitrogen compounds than to merely shift the balance between nitrate and nitric acid.

The reduction of ammonia emissions will lower ammonium ion concentrations, but this species is only a minor fraction of PM₁₀ concentrations in the Basin. Please refer to Attachments 4, A, and B.

H-6

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. Please refer to Attachment 1 for more details on discussion of the alternatives. Please refer also to Attachment 2 which addresses the ROG/NOx issue.

000605

H-6
cont

these two standards at a cost of roughly six billion dollars a year less than the District strategy. In addition neither the SCE nor the WSPA strategy depends on technological breakthroughs or changes in life styles to the extent that the District strategy depends on them.

The Alliance fully appreciates the pressure that individual Board members are under to adopt the staff recommended AQMP without change on March 17. At the same time we are concerned that in doing so the Board will in effect be closing the door to an alternative strategy which could be more effective at far less social and economic cost.

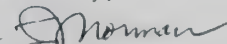
For that reason the Board should attempt to retain the authority to modify the mix and timing of the control measures recommended by the staff in the event that a more extensive review of PM-10 data and ozone chemistry shows that an ROG focused strategy offers earlier health benefits at a lower social and economic cost.

Subject to ARB and EPA approval, the authority to modify the plan can be retained by including appropriate language in the AQMP or the resolution adopting it; however, if the Board proceeds to adopt the NOx measures in question in the next few months, it will be too late to modify the mix and timing of measures in the plan if so indicated.

In view of the potential air quality and economic benefits of an ROG focused approach, the Alliance recommends that the Board adopt the staff AQMP with an adoption schedule which would implement all proposed Tier I ROG focused measures during Tier I (by 1994) and all proposed Tier I and Tier II NOx focused measures and proposed Tier II ROG focused measures during Tier II (1994 to 2000).

This schedule would give the District a low risk opportunity to determine whether an ROG focused strategy will in fact attain the ozone standard earlier than scheduled and still accomplish its other air quality objectives, including PM-10 attainment, on schedule at a far lower social and economic cost without dependence on technological breakthroughs. With this evidence the District should be able to persuade ARB, EPA and the environmental community to approve an amended ROG focused AQMP by 1994 or sooner.

Sincerely,


E. James Norman
Chairman

000606

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION

107 SOUTH BROADWAY SUITE 4027
LOS ANGELES CALIFORNIA 90012-4596
(213) 620-4460



RESPONSES TO COMMENTS
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION (1/5/89)
COMMENT LETTER I

January 5, 1988 File : 700.604

Brian Farris
Senior Air Quality Specialist
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

NOTICE OF EXTENDED REVIEW PERIOD FOR ENVIRONMENTAL IMPACT REPORT
ON THE DRAFT AIR QUALITY MANAGEMENT PLAN

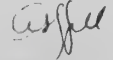
We have reviewed the subject document regarding the proposed project, and have the following comments:

Based on the information provided, we recommend the following:

- I-1
- ☒ We have no further comments at this time.
- ☐ The proposed project should address the attached comments.
- ☐ Negative Declaration. See attached comments.
- ☐ Mitigated Negative Declaration. See attached comments.
- ☐ EIR. See attached information on scope and content.

I-1 Your comment is noted.

Thank you for this opportunity to review your document. If you have any questions, please contact Arthur Heath at (213) 620-5433.


ANNE SAFFELL
Environmental Specialist IV

cc: Mr. Keith Lee, State Clearinghouse

000607

California Spa & Pool Heater Manufacturers Association

RESPONSES TO COMMENTS
CALIFORNIA SPA & POOL HEATER
MANUFACTURERS ASSOCIATION (2/1/89)
COMMENT LETTER J

February 1, 1989

Ms. Suzanne Reed
Special Projects Coordinator
SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT
El Monte, CA 91731

Re: Comments on the Proposed Modifications to the
Draft 1988 Air Quality Management Plan
and Environmental Impact Report

Dear Ms. Reed:


Enclosed are California Spa and Pool Heater
Manufacturers Association's comments on the following:

- (1) Proposed Rule D-5, "NOx Emission Reductions
from Swimming Pools" in the draft Air Quality
Management Plan (AQMP);
- (2) The Final Environmental Impact Report; and
- (3) The draft AQMP.

Proposed Rule D-5 will have an onerous impact on
the swimming pool and spa manufacturing industry and the
residents of Southern California. The Association is undertaking
studies to determine NOx emissions from gas heaters as well as
usage rates of these heaters on swimming pools and spas.
Representatives from the Association look forward to discussing
the results of these studies with the SCAQMD staff. These
studies will provide the Association and SCAQMD with adequate
pool and spa inventory data to evaluate the extent, if any, of
NOx emission reduction needed from gas heaters on swimming pools
and spas.

Please ensure that these comments are made part of
the administrative record on the Air Quality Management Plan.

Sincerely,



Frank A. Tumminia
President

(Responses to comments will begin on a following page.)

000608

COMMENTS ON THE AIR QUALITY MANAGEMENT PLAN

Submitted by the
CALIFORNIA SPA AND POOL HEATER MANUFACTURERS' ASSOCIATION
February 1, 1989

I. INTRODUCTION

The California Spa and Pool Heater Manufacturers' Association ("Association") is a forum that addresses issues of public interest and health relating to warm water aquatics. The Association learned only recently that the South Coast Air Quality Management District (SCAQMD) had modified the September 1988 version of its proposed Air Quality Management Plan (AQMP) to include Rule D-5, "NOx Emission Reductions from Swimming Pools." This modified version of the AQMP was apparently released in late 1988.

The Association has worked hard these last few weeks to evaluate this Rule and its role in the AQMP. The Association submits the following comments for the record. These comments include: (1) a summary of the Association's position on Rule D-5; (2) a detailed evaluation of this Rule; and (3) an evaluation of deficiencies in the final EIR and the AQMP.

II. EXECUTIVE SUMMARY AND RECOMMENDATIONS

An extension of time should be given for interested parties to comment on the recent modifications to the AQMP,

603000

specifically Rule D-5. Parties impacted by this Rule were given less than 30 days to review and comment on it in comparison to the several months a majority of interested parties had for review of rules in the original AQMP.

J -1

This is not an EIR issue. However, it has been addressed in response to AQMP comments by allowing other technologies capable of achieving equivalent emission reductions.

J-1

• Rule D-5, as proposed, would have a serious economic impact on the swimming pool and spa manufacturing industry in Southern California, with no benefit to air quality in the Basin. The economic impact of losing this industry to the State of California is substantial.

• SCAQMD's proposed Rule would adversely affect the quality of life of residents in the Los Angeles Basin in that it would deprive many residents of the well recognized and documented social, recreational, health and safety benefits of swimming and soaking in heated pools and spas.

• SCAQMD has proposed Rule D-5 with no data to support its need, cost, or cost-effectiveness and has failed to consider any alternative control technologies. In addition, the SCAQMD has failed to present: (1) the emission reductions to be achieved by Rule D-5 and (2) the secondary impacts associated with the use of solar technologies, including public health, economic, and land use impacts. Without this information, the SCAQMD cannot draft an Environmental Impact Report on the AQMP that complies with the California

Environmental Quality Act (CEQA) or associated guidelines.

The Association requests that Rule D-5 be redrafted prior to adoption of the AQMP to eliminate the use of solar collectors and to reflect the SCAQMD's approach on the residential water heating rule (Rule 1121).

III. COMMENTS ON RULE D-5

1. Source Category: Pools and spas should be in different source categories because of their different uses. Pools are generally used during the day, and are usually not heated. Spas are usually used during the evening, and are always heated.

2. Control Methods: The SCAQMD should not mandate installation of a specific type of control technology. SCAQMD's approach is anti-competitive because it suggests solar technology must be used. SCAQMD has failed to consider a variety of other control technologies available to reduce NOx.

3. Emissions: The SCAQMD has failed to determine the NOx emissions reductions this Rule would achieve.

The Association's members will initiate studies to measure NOx emissions from, as well as the usage of, gas heaters on swimming pools and spas. The results of these studies will allow the Association and SCAQMD to determine the industry's contribution of NOx to the Los Angeles Basin. The industry will also provide the SCAQMD with adequate pool

and spa inventory or census data to evaluate the extent, if any, of NOx emission reductions needed from gas heaters on swimming pools and spas.

According to SCAQMD, the total NOx emissions inventory from 1985 for the South Coast Air Basin is 1,040 tons (2,080,000 lbs.) (from the final EIR, Table 2-1, p. 2-6). The contribution of gas pool and spa heaters to this total is believed to be less than 1/100 of 1%. Clearly, as will be conclusively shown through the Association's studies, gas heaters on swimming pools and spas are extremely minor contributors of NOx in the Los Angeles Basin.

4. Control Costs/Cost-Effectiveness: The SCAQMD states that there may be possible long-term savings from installation of flat plate solar collectors. A good solar system design requires 1 to 1½ square feet solar panel area in relationship to the square foot surface of the pool. For example, a small pool of 500 square feet would require 500-750 square feet of solar collectors. This would be 16 to 25 collectors. The installed cost would be approximately \$10,000 to \$25,000. Since most residential pool owners use less than \$100 of gas to heat their pools, it would take a pool owner at least 100 years to recoup his costs. For those pool owners who have the highest heat usage, pay back would still be longer than 12 years.

In comparison, the installed cost of swimming pool and spa gas heaters range from \$900 to \$1,200, depending on

the size of the heater.

Section 40440 of the California Health and Safety Code requires that the rules and regulations that the SCAQMD adopt be efficient and cost-effective. Clearly the SCAQMD has failed to meet this mandate with its proposed Rule D-5.

5. Other Impacts: Under this heading, the SCAQMD has stated that this Rule might result in fuel savings. The SCAQMD has failed to discuss the secondary impacts of using solar technology including increased land use, increased use of fossil fuels needed to run circulating water pumps full time, and public health impacts from less use of spas and pools for therapeutic and recreational purposes.

6. The background that SCAQMD provided on the Rule clearly demonstrates that the SCAQMD does not understand how pool and spa heaters function. The SCAQMD equates residential water heaters to pool and spa heaters. Water heaters are not used to heat swimming pools or spas. Most spas are heated by electric elements; only 8.9% of the spas/hot tubs sold in 1987 were equipped with gas heaters. (Reference: National Spa and Pool Institute, 1987 Swimming Pool and Spa Industry Market Report - Attachment 1). Very little natural gas is used to heat pools, as few people have the discretionary income to afford \$600.00/month gas bills.

7. The SCAQMD states that solar water heating is a well developed technology and the feasibility of applying solar technology to swimming pool heating has been proven in

other "sunshine" states like Florida.

Solar water heating is a well developed technology. However, solar technology offers little as a means of maintaining a pool at a proper temperature and cannot raise a spa to the prescribed 100 degree temperature. Pool and spa heaters are designed to meet the needs of the consumer public. People use their pool or spa for different purposes and at different times, and want them heated at their demand. A high BTU output gas heater can quickly bring the temperature of a pool or spa up to the proper level of warmth; solar collectors cannot do this. All modern pool and spa heaters are safe, reliable, give very long service, and usually are the essential accessory that makes the pool or spa valuable and useful to those who use them for recreational, health and therapeutic purposes.

The Association disagrees that solar applications to heat swimming pools have been proven. There is almost no solar pool or spa heating activity in California at this time. This technology is not being applied in California because quality materials for sufficient heat transfer are expensive, and less costly systems are unreliable. The market place has rejected this technology. In 1980, 7% of all new residential swimming pools were equipped with solar technology. After the federal and state tax credits were abolished, solar collector use dropped significantly. In 1986, only 3% of all new residential pools were equipped with

solar technology. The trend has been the same for new non-residential pools. In 1983, 6% of these pools were equipped with solar collectors. In 1986, this had dropped to 1%. Use of solar technology on spas is almost non-existent. It is believed to be less than 1/2 of 1%.

8. To heat a spa with solar technology normally requires an insulated storage tank to allow water storage at high temperatures. For a typical spa (500-700 gallons), a 200 gallon tank, at a minimum, will be needed. A gas fired residential water heater tank is usually 30 to 40 gallons. When use of the spa is desired, the stored water can be further heated mixed with lower temperatures to achieve the desired spa temperature. Without the insulated storage tank and pump, an auxiliary spa heater would always be needed. This increases costs substantially and lengthens payback time.

9. This Rule is beneficial to the solar industry and extremely detrimental to the general public's use and enjoyment of swimming pools and spas, with no known resulting air quality benefits. Because of the costs associated with solar collectors, many people will not install a pool or spa if solar collectors are mandated. As discussed above in Section III 4, the costs of this technology are prohibitive.

10. The SCAQMD states that solar panels installed for heating swimming pools may also be used for other water heating purposes. Other uses would require the addition of

isolating heat exchangers and more controls. This is cost prohibitive and may have substantial health impacts.

11. The SCAQMD states that it may seek other local jurisdictions' cooperation to include solar installation requirements in building codes. The SCAQMD should have asked for input from these agencies to determine the feasibility of its approach and the time frame necessary to implement such an approach.

IV. COMMENTS ON EIR

1. CEQA guidelines recommend that the lead agency consult early on with governmental agencies and interested parties regarding a particular rule or project. This "scoping" helps identify the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in an EIR and eliminate from detailed study unimportant issues. (CEQA Guidelines §15083). Public participation is an essential part of the CEQA process. It allows an agency to receive and evaluate public reactions to environmental issues related to the agency's activities. (Public Resources Code §§21083 and 21087; CEQA Guidelines §15201).

The SCAQMD added Rule D-5 at the last minute, apparently under pressure from the solar industry. The SCAQMD failed to request any information from the impacted industry. Clearly the SCAQMD has not complied with the spirit or intent of CEQA in slipping Rule D-5 into the AQMP

J-1a

As noted in responses 2-5, 2-12, and in the Executive Summary, most of the AQMP EIR qualitative analysis is consistent with CEQA requirements for a policy plan such as the AQMP.

The 1988 AQMP development and review process represents the District's most ambitious public outreach effort to date. The District and SCAG staff have held over 150 briefings since June 1988 on the preliminary and draft plan. These briefings targeted elected officials and staff, other agencies, business interests, technical and professional organizations, environmental groups, and community groups representing a range of concerns and interests. The District also has mounted an aggressive media campaign to make sure the general public is aware of the AQMP and overall agency air pollution control efforts.

It should be noted that adoption of the AQMP does not mean the end of the public's involvement in air quality planning issues. In setting the plan adoption hearing date, the AQMD Board directed District staff to work with SCAG staff to propose the establishment of regional task forces to help develop a framework for incorporating such considerations as job/housing balance, socio-economic impact analysis, and public participation/public education into the ongoing plan implementation and revision process. Such task forces, which would report back to the AQMD Board within 9 to 12 months, would supplement ongoing AQMD and SCAG advisory groups and public outreach activities. The task forces would include, at a minimum, representatives of large and small business, labor unions, ethnic minorities, academic and research institutions, homeowner and community groups, other agencies, and local government.

As these control measures are examined as potential rules, any additional information which can be provided by the California Spa and Pool Manufacturers Association during the workshop and rule-making process, would be appreciated. The District will then be better able to quantify and refine the emissions reductions estimates and cost-effectiveness ratios of particular control measures (see control measures D-5).

J-1a
cont

at the eleventh hour.

2. The Legislature adopted CEQA with the intent that all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the quality of the environment, will regulate such activities so that major consideration is given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian. (Public Resources Code §21000.)

Rule D-5 will seriously impact the quality of life of Southern Californians and will result in little, if any, air quality benefit. There are 380,000 pools and an estimated 576,000 spas in the densely populated four county SCAQMD jurisdiction. According to the 1980 National Spa and Pool Institute-sponsored Burke Marketing Research "Pool Heater Study," 76% of Pacific Southwest area pool heater owners feel their ability to heat their pools is important to them. Since that study was completed prior to the growth in the spa industry, the percentages are most likely even higher now. This same report indicates that 31 separate individuals use each pool. Clearly this Rule does not comply with the spirit or intent of CEQA.

3. CEQA requires that the lead agency provide adequate time for other public agencies and members of the public to review and comment on a EIR that it has prepared.

J-1a
cont

(Public Resource Code §21083 and 21087; CEQA Guidelines §15203).

The SCAQMD failed to give notice and opportunity to comment to the industry that will be severely impacted by Rule D-5. This industry has had less than 30 days to review the AQMP and the final EIR, whereas other industries have been given several months to comment on these documents and work with SCAQMD staff to change their contents.

4. CEQA requires that cumulative impacts of a project or projects be discussed when they are significant. (Public Resources Code §§21083 and 21087; CEQA Guidelines §15130).

The AQMP is a collection of pollution control rules that will have major air quality, public health, and socio-economic impacts. In order to adequately evaluate the cumulative effects of these rules the SCAQMD must know the emission reduction capability, costs and cost-effectiveness of each rule. The SCAQMD had no such information on Rule D-5. Therefore, the SCAQMD has failed to adequately address the cumulative impacts of the AQMP.

Furthermore, CEQA requires the agency to examine reasonable options for mitigating or avoiding any significant cumulative effects of a proposed project. The SCAQMD cannot do this because it has not performed the first step, that is determining the cumulative impacts of all the rules in the AQMP.

000619

5. CEQA requires that an EIR trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. (Public Resources Code §§21083 and 21087; CEQA Guidelines §15131).

The SCAQMD has failed to address the socio-economic impacts of Rule D-5. The economic and social impacts of Rule D-5 are substantial for a resident of Los Angeles. As described above in Section III, application of solar technology is cost-prohibitive and land use intensive. It is likely that residents will lose the medical, health and recreational benefits of their pools and spas if this Rule is included as part of the AQMP, and later adopted.

The economic impact of Rule D-5 on the swimming pool and spa manufacturers and related industries is also substantial. The pool/spa industry in 1987 is estimated to have generated almost \$630,000,000 in business, construction and services for the Los Angeles, Orange, Riverside and San Bernardino County areas. The direct, indirect and induced job impact is as follows:

| | | |
|-------------------|---|-------------------|
| New Construction | - | 13,600 jobs |
| Related Products | - | 1,500 jobs |
| Aftermarket Goods | - | <u>8,000 jobs</u> |
| Total | | 23,100 jobs |

✓ The taxes that the industry provides are also an important

J-1 a
cont

part of the economic impact. The grand total estimated taxes paid in 1987 was \$257,000,000.00, which includes federal, state and local taxes.

6. CEQA requires the lead agency to use its best efforts to find out and disclose all that it reasonably can to forecast the impacts of a proposed rule or project. (Public Resources Code §§21083 and 21087; CEQA Guidelines §15144).

The SCAQMD has made no efforts to determine the emissions reduction potential, the costs or the cost-effectiveness of Rule D-5. The SCAQMD has failed to use its best efforts to adequately forecast the impacts of this Rule.

7. CEQA requires that an EIR be prepared with a sufficient degree of analysis to provide the decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. (Public Resources Code §§21083 and 21087; CEQA Guidelines §15151).

The SCAQMD has failed to provide any analysis on the impacts of Rule D-5; as stated above and in Section III, the SCAQMD has failed to provide any information on NOx emission reductions, the costs and the cost-effectiveness of this rule. No decision-maker could make an informed decision regarding the benefits and risks of Rule D-5, given the complete lack of information in the Rule.

8. A program EIR, such as the EIR on the AQMP,

J-1 a
cont

allows the lead agency to consider broad policy alternatives and program-wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts. The SCAQMD should use this opportunity to make the Association's recommended changes. Information that can be developed by the Association and the SCAQMD on usage and NOx emissions from swimming pool and spa heaters will allow development of a technically sound rule at an early stage in the process.

V. COMMENTS ON AQMP

1. The SCAQMD appears to be taking two different positions on the use of solar panels for residential and public sector controls. The SCAQMD deleted two proposed control measures from the Tier I Residential and Public Sector Controls: D-2, "Application of Solar Panels on Residential Water Heaters" and D-3, "Application of Heat Transfer Modules on Residential Heating Furnaces." This was "due to the high cost of the control techniques, as a result of the low cost of natural gas, the low level of NOx emissions from this source category and low fuel consumption by the sources." Furthermore, the SCAQMD recognized that "cost effectiveness is the main concern in promoting solar energy as a power source." The Association agrees with the SCAQMD comments regarding use of gas vs. use of solar.

2. Insufficient cost analysis has been prepared for the AQMP control measures. The SCAQMD should explore in

more detail with industry (a) a combination of technologies and their ensuing costs to meet the desired requirements in each control measure, and (b) which industries are affected.

3. Given the technical complexity of the AQMP, the haste with which Rule D-5 was added and the overall plan prepared, and the major public policy implications of the suggested control measures, more time is needed to review and build consensus for the plan's provisions prior to adoption and transmittal of the 1988 AQMP to ARB and EPA.

The SCAQMD stated that it is in a hurry to adopt this plan so that EPA will incorporate it as part of the Federal Implementation Plan (FIP). The SCAQMD is concerned that EPA will promulgate a FIP in March or April of 1989. However, the court, in the suit (Coalition for Clean Air v. U.S. EPA, et al.) referred to in the AQMP, has not yet determined the schedule for FIP development. EPA has requested the court to allow it to notice a request for comments on how best to develop and implement a FIP. A minimum of 45 days would be needed to obtain public comments. In addition, the court has expressed an inclination to give EPA over a year to draft a FIP. The SCAQMD claims that postponing adoption of the AQMP will prevent the SCAQMD's efforts from being considered as part of the FIP development. However, EPA's past practices in the FIP arena show that EPA has always relied on the local planning agency and its proposals and plans, whether draft or final.

4. Control measures, such as Rule D-5, for local government implementation require ordinance adoption. However, the controversial nature of the proposed control measures makes uncertain whether local government regulation will achieve significant results. Adoption of local ordinances by July, 1990 is unrealistic given the environmental review process required. Ordinance adoption is a lengthy process, requiring that cities schedule and notice hearings and other activities. Similar solar mandate ordinances that the SCAQMD proposes under Rule D-5 have been defeated in the Cities of Santa Barbara and San Diego.

5. Prior to adoption, the SCAQMD must strengthen the relationship between the proposed measures and the emissions reductions. For example, no emission reductions are presented for Rule D-5.



LEAGUE OF CALIFORNIA CITIES

ANAHEIM
BREA
BUENA PARK
COSTA MESA
CYPRESS
DANA POINT
FOUNTAIN VALLEY

FULLERTON
GARDEN GROVE
HUNTINGTON BEACH
IRVINE
LAGUNA BEACH
LA HABRA
LA PALMA

LOS ALAMITOS
MISSION VIEJO
NEWPORT BEACH
ORANGE
PLACENTIA
SAN CLEMENTE
SAN JUAN CAPISTRANO

SANTA ANA
SEAL BEACH
STANTON
TUSTIN
VILLA PARK
WESTMINSTER
YORBA LINDA

1200 NORTH MAIN, SUITE 710, SANTA ANA, CALIFORNIA 92701 714/972-0077

December 13, 1988

Mr. Norton Younglove, Chairman
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Dear Norton,

The city officials of Orange County are concerned about the quality of the environment within the South Coast Air basin and are committed to helping find a workable plan by which to comply with reasonable standards to achieve cleaner air within a realistic period. We believe that a sensible air quality plan, which balances economic and social impacts with environmental goals, is achievable if a truly consensus driven methodology is used to develop it.

At its regular meeting held November 17, 1988, the Orange County Division, League of California Cities unanimously voted to request a six month extension on the adoption of the Air Quality Management Plan (AQMP) under consideration by the District Board of Directors on December 16. Additionally, the members of the Division request that the cities of Orange County be actively and directly involved in any process which is designed to obtain consensus on the plan or to study its more controversial elements. Attached is a copy of the recommendations acted on by the Division at its meeting; as you can see, these recommendations also cover plans promulgated by the Southern California Association of Governments (SCAG) which are, to varied degrees, interdependent with the AQMP.

We believe that a process can be developed quickly to refine the plan within the six month extension we are requesting. We simply are not asking to delay the plan's adoption as a tactic to ignore a significant problem in our metropolitan area; we are committed to cleaner air and want to support viable, balanced plans to achieve it. As pointed out by some of our city officials and others, the current plan appears not to be particularly well-balanced in its approach.

Over the last several weeks, alternative plans by which to achieve the goal of cleaner air sooner and at less cost have been identified by the Southern California Edison Company and the Western Oil and Gas Association (WOGA). In light of the economic impact analysis conducted by the California Center for Economic and Environmental Balance on the proposed AQMP, further evaluation of these other alternatives is appropriate before any plan is adopted by the District. Even the economic and health impact analyses conducted on behalf of the District and SCAG demonstrate conflicting conclusions. It is vitally important, in our opinion, that:

RESPONSE TO COMMENTS
LEAGUE OF CALIFORNIA CITIES, ORANGE COUNTY DIVISION (12/13/88)
COMMENT LETTER K

- K-1 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.
- K-2 Your comment, concerning an extension on the adoption of the AQMP, is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. The review period was extended an additional 45 days from 19 December 1988 to 1 February 1989. CEQA Section 15087 (c) permits public review periods ranging from 30 to 90 days with a standard 45-day public review period for most documents. To date the AQMP EIR has been available for comments a total of 104 days. The dates are as follows:
- a) September 12, 1988 to October 27, 1988 -- Initial review of the Draft AQMP EIR
 - b) December 2, 1988 to December 16, 1988 -- 14-day review period for the December EIR
 - c) December 19, 1988 to February 1, 1989 -- 45-day review period for the December EIR

The public review and comment period for the AQMP EIR exceeds that required and allowed by CEQA and CEQA Guidelines

000624



LEAGUE OF CALIFORNIA CITIES

ANAHEIM
BREA
BUENA PARK
COSTA MESA
CYPRESS
DANA POINT
FOUNTAIN VALLEY

FULLERTON
GARDEN GROVE
HUNTINGTON BEACH
IRVINE
LAGUNA BEACH
LA HABRA
LA PALMA

LOS ALAMOS
MISSION VIEJO
NEWPORT BEACH
ORANGE
PLACENTIA
SAN CLEMENTE
SAN JUAN CAPISTRANO

SANTA ANA
SEAL BEACH
STANTON
TUSTIN
VILLA PARK
WESTMINSTER
YORBA LINDA

200 NORTH MAIN SUITE 710 SANTA ANA, CALIFORNIA 92701 714 972-0077

K-3

December 13, 1988

Mr. Norton Younglove, Chairman
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

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We believe that a process can be developed quickly to refine the plan within the six month extension we are requesting. We simply are not asking to delay the plan's adoption as a tactic to ignore a significant problem in our metropolitan area; we are committed to cleaner air and want to support viable, balanced plans to achieve it. As pointed out by some of our city officials and others, the current plan appears not to be particularly well-balanced in its approach.

Over the last several weeks, alternative plans by which to achieve the goal of cleaner air sooner and at less cost have been identified by the Southern California Edison Company and the Western Oil and Gas Association (WOGA). In light of the economic impact analysis conducted by the California Center for Economic and Environmental Balance on the proposed AQMP, further evaluation of these other alternatives is appropriate before any plan is adopted by the District. Even the economic and health impact analyses conducted on behalf of the District and SCAG demonstrate conflicting conclusions. It is vitally important, in our opinion, that:

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. Please refer to Attachments 1 and 2 which describe a total of nine alternatives considered during the development of the AQMP and their environmental impacts (Attachment 1) and present a critical evaluation of the alternative plans provided by SCE and WSPA (Attachment 2). These alternatives include the following: 1) ROG Primarily Alternative A (SCE); 2) ROG Primarily Alternative B (WSPA); 3) Implement Tiers I and II Only; 4) Implementation of Least-Cost Measures Only; 5) Delayed Compliance; 6) Alternative Growth Scenario; 7) Alternative Growth Scenario; 8) Additional Control Effort; and 9) No Project.

Based on the evaluation of the alternatives, in particular those presented by WSPA and SCE, the District concluded that all ambient air quality standards cannot be obtained by either the WSPA or SCE control strategies. In contrast, with implementation of Tier I, II, and III control measures, the District's plan predicts air quality in compliance with the federal standards by the year 2010.

000625

K-4

Your comment is noted. Please refer to the response for comment K-2.

Mr. Norton Enclosure
December 15, 1988
Page two

the true overall impact of the plan be determined; alternatives such as the Edison's and WOGA's be explored; and that the approach which represents the best balanced alternative be supported. We support cleaner air, but we also do not want to devastate our economy in its pursuit; we believe that an unbalanced approach which overly favors one goal over the other represents irresponsible public policy.

As we have requested in the past, the Orange County Division again is asking the District to delay adoption of the AQMP. We also ask that the District commit itself to engage in a process to refine the plan based upon input from alternative approaches and additional analysis so that it can be adopted in six months.

Sincerely,



Phillip R. Schwartze
President
Council Member, San Juan Capistrano

CC: Hank Wedaa
Harriett Wieder
Orange County Mavors, Council Members, and City Managers

000026



COMMERCIAL INDUSTRIAL DEVELOPMENT ASSOCIATION

December 13, 1988

RESPONSES TO COMMENTS
COMMERCIAL INDUSTRIAL DEVELOPMENT ASSOCIATION (12/13/88)
COMMENT LETTER L

000627

DIRECTORS

FREYER, ARTHUR
PRESIDENT
Transportation

WALL
VICE PRESIDENT
Construction Projects, Columbia

INARLOTTI, JR.
VICE PRESIDENT
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RYSEFF
PRESIDENT
Diversified Shipping Centers

ILLIAM R. HAGERMAN
PRESIDENT
Transamerica Title Insurance Company

NEWY COSS FITZWATER
PRESIDENT
The Irvine Company

VENDELSON
PRESIDENT
Business Enterprises

RENNER, ERICKSON
PRESIDENT
City of Santa Ana

IAN S. GOODFELL
PRESIDENT
The Marquette Company

RYAN, KING
PRESIDENT
King & Associates

NEWY, KNIGHT
PRESIDENT
Urban Development Company

PHENY, McARTHUR
PRESIDENT
Development

HARDY, G. MUNSELL
PRESIDENT
Images and Associates

NANTALIS
PRESIDENT
Urban Development

RICHARD OAKES, JR.
PRESIDENT
Image

ERT, A. PETERSON
PRESIDENT
Small Banker

THYER, RANDALL
PRESIDENT
Image, Mumpers & Hughes

RIDGEWAY
PRESIDENT
Texas Development Co.

YANN, SEITZ
PRESIDENT
Keller Enterprises

ER, SHUMWAY
PRESIDENT
Image Properties

ERN, TORRELL
PRESIDENT
The Related Properties

PRESIDENTS

OLSON
PRESIDENT
Image Properties

RIDGEWAY
PRESIDENT
Texas Development Co.

NEWY, KNIGHT
PRESIDENT
Urban Development Company

RICHARD OAKES, JR.
PRESIDENT
Image

The Honorable Norton Younglove, Chairman
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

The Honorable Don Griffin, President
Southern California Association of Governments
600 South Commonwealth Avenue, Suite 1000
Los Angeles, CA 90005

RE: Comments on the Air Quality Management
Plan and Growth Management Plan

Gentlemen:

The Commercial Industrial Development Association (CIDA) is pleased to submit comments on the Growth Management Plan as it relates to the Air Quality Management Plan. CIDA represents over 390 member companies involved in the development of commercial and industrial buildings. While our office is located in Orange County, our members do business throughout the region.

As an association of businesses involved in the commercial and industrial real estate development industry, our attention has focused on the proposal to reduce future employment and increase housing in "job-rich" areas as proposed in the Growth Management Plan.

CIDA is on record in support of land use planning that balances jobs with housing. We believe that clustering jobs and housing is the most efficient urban form, minimizing the length and number of commute trips and the associated vehicle emissions. However, we have fundamental differences with the approach taken to achieve greater jobs/housing balance in the Growth Management Plan.

First, we question the efficacy of mandating jobs/housing balance. Development is largely determined by market and other economic forces that function independently of governmental mandates. Additionally, we believe there is growing recognition in the marketplace of the advantages of mixed-use development. Consequently, we seriously doubt whether a rigid mandatory program will achieve the desired results. Moreover, any regulatory scheme to achieve greater balance between housing and jobs should rely on incentives.

L-1 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

L-2 Jobs/housing balance implementation is politically feasible since it is proposed in the Growth Management Plan that it be carried through voluntarily by existing entities and guided by presently available regulatory measures.

L-3 Please refer to response to comment L-2. The first tier (5 years) of the jobs/housing balance measure does provide guidelines for local jurisdictions to provide incentives for achieving a balance in the region between housing and jobs. It includes, among other guidelines, the following: 1) Establish regional and local priorities for building the necessary infrastructure; 2) Locate new major regional and local public facilities that are job inducing in job-poor regions and housing inducing in housing-poor subregions; 3) Job-poor localities can tailor their economic activities to industries requirements; 4) Provide incentives for developers to build housing in job-rich subregions; 5) Link transportation demand management measures to the job/housing balance policy.

200 W. CHAPMAN AVENUE, SUITE 200

ORANGE, CALIFORNIA 92668

The Honorable Norton Younglove, Chairman
The Honorable Don Griffin, President
December 13, 1988
Page 2

L-4

Second, we question the approach taken in the Growth Management Plan to disperse job growth to outlying areas. From a transportation and air quality perspective we think it makes more sense to concentrate jobs and housing around existing employment centers. Greater densities will enhance opportunities for transportation demand management and transit development, further reducing the growth in commute trips.

Third, we wonder whether the assumptions used to develop the jobs/housing recommendations reflect actual labor participation rates. In Orange County, for example, a majority of households include two wage-earners. The 1988 Orange County Annual Survey released earlier this month found that 63% of those residing in the south county also work there. Perhaps the characterization of Orange County as a "job rich" area is overstated.

Fourth, we have serious reservations about some of the proposed means of implementing the Growth Management Plan. For example, the proposal to assess fees on commercial development in "job rich" areas which would then be used to fund economic development in "job poor" areas or housing development in "housing poor" areas seems to conflict with statutory and case law that requires the imposition of fees on a project to relate directly to the burdens created by that project. Not only will many of the implementation strategies proposed pose difficult political choices, they also raise fundamental legal questions.


And last, the complexity of these plans and the sweeping changes they will have on the way we live and do business in the region are overwhelming. Many questions remain unanswered; others remain unasked. We expect there to be many unanticipated and perhaps unwanted consequences resulting from the implementation of these plans. Initially, there will be a chaotic period as governments struggle with how to implement the plans and the approval of development projects will be delayed.

L-4

For these reasons, we urge you to adopt the Air Quality Management Plan as a framework for future action, with implementing rules and regulations developed in a systematic and thoughtful process.

CIDA appreciates the opportunity to provide comments. If you have any questions or comments, please feel free to call us.

Sincerely,


Jeffrey B. Armour

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. As explained in the Executive Summary, (part of the Addendum under separate cover), the AQMP is similar to a general plan and the depth of information and degree of detail in the evaluation are, of necessity, very general. More detailed evaluation of impacts and procedures for implementing measures will occur during rule development. The purpose of the jobs/housing measure is to provide guidelines for a regional balance between the locations of jobs and housing and not only to disperse job growth to outlying areas. This balance will lower the amount of miles travelled by commuters and thereby decrease emissions from motor vehicles, the principal source of emissions in the Basin.

000628



COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

1955 Workman Mill Road / Whittier, California
Mailing Address: / P. O. Box 4998, Whittier, California 90607-4998
Telephone: (213) 699-7411 / From Los Angeles (213) 685-5217

CHARLES W. CARRY
Chief Engineer and General Manager

December 16, 1988
File No. 31R-10.10

Governing Board
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA

Gentlemen:

Draft 1988 Air Quality Management Plan

The County Sanitation Districts of Los Angeles County appreciate the opportunity to comment on the Proposed Modifications to the Draft 1988 Air Quality Management Plan and the Final Environmental Impact Report for the Draft Air Quality Management Plan. The comments provided herein are limited to the areas of wastewater treatment and solid waste management and supplement/reiterate our concerns set forth in our letter of October 27, 1988. The comments on the Proposed Modifications to the 1988 Draft Air Quality Management Plan (AQMP) are provided in Section 1, and the comments on the Final Environmental Impact Report (FEIR) to the AQMP are provided in Section 2.

Section 1 - Comments on the Proposed Modifications to the Draft 1988 AQMP

1. In response to comments made by the Sanitation Districts on proposed control measure D-2, "Out of Basin Transport of Biodegradable Solid Waste", the South Coast Air Quality Management District (SCAQMD) has proposed that an interagency task force be formed between the SCAQMD and the Sanitation Districts in order to examine this control measure with regard to the air quality and solid waste management goals of the two agencies. The Sanitation Districts fully support this concept and welcome the opportunity to serve on such a task force. However, until this task force is formed and has a chance to examine the subject control measure, its incorporation in the 1988 AQMP is premature. Inclusion of this control measure in the AQMP will result in it being included as part of the State Implementation Plan (SIP), and will prevent the siting of new landfills in the South Coast Air Basin (SCAB). Thus, in order to preserve all available options for the interagency task force, THE PROPOSED CONTROL MEASURE D-2 "OUT OF BASIN TRANSPORT OF BIODEGRADABLE SOLID WASTE" SHOULD NOT BE INCLUDED IN THE 1988 AQMP.
2. In our October 27, 1988 comment letter on the Draft AQMP, the Sanitation Districts stated that the SCAQMD's estimates of the potential emission reductions associated with proposed control measure D-2, "Out of Basin Transport of Biodegradable Solid Waste" were greatly overstated. The Sanitation Districts could not find a response to this comment in the "Proposed Modifications to the Draft 1988 AQMP" document. As previously stated, the Sanitation Districts

RESPONSES TO COMMENTS L.A. COUNTY SANITATION DISTRICT (12/16/88) COMMENT LETTER M

M-1

Your comments are noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. The AQMP proposals, in essence, serve local governments so that they may set examples for their constituents regarding sound air quality management practices. These proposals are not cast in stone but are part of a dynamic process that will be revised periodically to accommodate the changes in the region. The District encourages an ongoing dialogue with the elected officials to help overcome any existing impediments to implementation.

As explained in the Executive Summary (part of this Addendum under separate cover), the AQMP is similar to a General Plan and the depth of information and degree of detail in the evaluation are, of necessity, very general. The focus of impact analysis is most often qualitative (not quantitative) and reflects the level of information available at this tier of review. Development of detailed data and impact evaluation will be undertaken during rule-making processes of specific control measures.

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M-1
cont

believe it is very important to determine the correct emission reduction potential of this control measure so that its potential effectiveness can be correctly assessed. It is our strong opinion that your current estimates are greatly overestimated. With respect to the emissions associated with control measure D-2, it should be noted that the Sanitation Districts have recently released a request for proposals for a solid waste by rail project. Proposals are to be received on March 31, 1988, and will address loading facilities, rail transport, unloading facilities, and final disposal site. The proposals will also address electrification of the rails. Upon receipt of these proposals, the Sanitation Districts will have a better understanding of the feasibility of such a project as well as the time frame for implementation. In addition, a realistic assessment of environmental impacts can be developed based upon the proposal and an assessment of increased or decreased air emissions can be made. The net air emissions will be dependent upon the location of the loading facilities.

3. In response to comments made by the Sanitation Districts on proposed control measure D-3, "Control of Fugitive Emissions from Publicly Owned Treatment Works", the SCAQMD continues to make the erroneous assumption that 100 percent secondary treatment is synonymous with pure oxygen systems and covered reactors. This type of treatment system is extremely complex and is inferior to a more commonly used air activated sludge system. The higher effluent quality is required for water reuse application which is very important in an area that is water short. The conventional activated sludge process, which makes up the large majority of the existing secondary systems in the basin, does not employ covered tanks.
4. Throughout the subject document, digester and landfill gas is treated as a "dirty" fuel. These fuels burn with the same emission levels as methanol with respect to criteria pollutants, they should be recognized along with methanol as "clean" burning fuels.

Section II - Comments on FEIR for the 1988 AQMP

M-2

1. Chapter 4, Section 4-25 Water Quality - Numerous Control Measures proposed by the SCAQMD result in increased amounts of toxic pollutants being disposed of in the sewer system. The Sanitation Districts are also under pressure to meet increasingly stringent water quality standards. The primary strategy for controlling toxics and other untreatable constituents in treatment plant discharges has been to institute industrial source controls which prevent such material from being discharged to the sewer. The SCAQMD cannot rely on air quality controls which transfer the problem to the water environment. It should not be assumed that liquid wastes from air quality control devices are sewerable.

M-3

Similarly, the SCAQMD is proposing various control measures that result in an increase in the amount of solid waste and hazardous waste being generated. Furthermore, the source control mitigation measure outlined for wastewater treatment facilities in the FEIR will result in the generation of materials requiring disposal at hazardous waste disposal facilities. The SCAQMD must realize that these measures will very seriously impact the available non-hazardous and hazardous waste landfill capacity. The FEIR drastically underestimates the

M-2

Please refer to the response for comment 1-4.

M-3

Please refer to the response for comment 1-45.

000630

| | |
|-------------|--|
| M-3 cont | very significant environmental impacts associated with transferring air quality problems to solid waste facilities, especially Class I disposal facilities. |
| M-4 | 2. Chapter 4, page 4-1-31, Residential and Public Sectors, Category D - The FEIR states that control measure "Control of Fugitive emissions from Publicly Owned Treatment Works" will remove approximately one ton per year of toxic ROG emissions from the basin. The FEIR acknowledges that this relatively minor reduction of toxic ROG emissions is not expected to significantly effect ambient ozone concentrations. The Sanitation Districts believe that the public may be better served by regulating more significant sources of ROG. In addition, Appendix C of the FEIR erroneously states that, if carbon adsorption is the process used to comply with the above referenced control measure, the carbon would have to be regenerated every 5 to 10 years. Studies conducted at the University of California, Davis show that the carbon would typically have to be regenerated every 30 to 60 days. The Sanitation Districts have extensive research data corroborating these findings. However, because the effectiveness of scrubbing to remove ROG's in the parts per billion range is undocumented, the POTWs will be unnecessarily forced to use the costly and inefficient carbon adsorption process. |
| M-5 | |
| M-6 | 3. Chapter 4, page 4-18-5, Sewage Treatment Facilities - The FEIR states that, if the expansion of sewage treatment facilities are restricted by control measures D-2 (Control of Fugitive Emissions from Publicly Owned Treatment Works) and F-6 (Uniform Quality Standard on all Gaseous Fuels), a number of water conservation measures can be implemented to allow an increased number of customers to utilize the facilities. This is incorrect. Reducing flow may increase hydraulic capacity, but it does not necessarily increase a treatment works capacity because many of the processes are dependent upon organic and/or solids loading. |
| M-7 | 4. Chapter 4, Page 4-14-3, Gas Turbine Power Generation - As the SCAQMD is aware, a clear theme that has been expressed by many communities and the general public is that recycling of waste materials must be implemented on a large scale in order to conserve the existing landfill capacity in the basin. The SCAQMD states that, as a result of increased control costs on gas turbines, up to 660 tons per day of newspaper would no longer be recycled and would have to be placed in sanitary landfills. The Sanitation Districts believe that it is important to realize that this 660 tons per day represents 38 percent of all the waste paper currently recycled in the South Coast Air Basin. The ambitious recycling efforts many cities are or will be undertaking may be jeopardized by a loss of reliable markets. More importantly, many multi-material recycling programs may be eliminated completely because revenues from paper recycling represent the greatest percentage of their income. Thus, other items which are currently recycled, such as aluminum, ferrous metals and glass may have to be landfilled. Therefore, the estimate of 660 tons per day which may have to go to landfills is seriously underestimated, and must be re-evaluated by SCAQMD. |
| M-8 | 5. Chapter 4, Page 4-18-16, Combustion of Digester Gas - The FEIR states that "... digester gas from POTW could be processed to achieve a uniform, pipeline-quality standard. It could then be put into gas utility distribution lines." This mitigation measure is in direct contrast with the policy of "maximum waste heat |

| | |
|-----|--|
| M-4 | Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMD. The District's goal is to formulate an integrated control strategy which will ensure that ambient air quality standards for ALL criteria pollutants are met by 2010 and which will achieve the maximum possible reduction in excess exposure to PM10 and ozone over the next ten years. It was determined that the Tier II level of control is necessary to just meet the federal PM10 standards. Since the inclusion of all control measures in Tier I and Tier II is required in order to achieve air quality standards, ranking the sources based on degree of reductions achieved or cost-effectiveness is not necessary. |
| M-5 | Your comment is valid regarding the regeneration of carbon adsorber. We agree that carbon would require regeneration every 30 to 60 days. The 5 to 10 years stated in the EIR should refer to the <u>replacement</u> of the carbon used in the carbon adsorption, and not to the <u>regeneration</u> . |
| M-6 | Your comment is noted. Water conservation measures are not anticipated to reduce the flow. These measures are intended to ensure that the flow is not increased beyond treatment works capacity. |
| M-7 | In its analysis of the environmental impacts of Proposed Rule 1134 (NOx Emissions Reduction from Gas Turbines), the District staff found no evidence that any paper recyclers would go out of business. The 660 tons per day figure is an estimate provided by one of the paper recyclers affected by Rule 1134 and contradicts the District staff analysis. However, this figure was used as a "worst case scenario" to determine cumulative solid waste impacts. The worst case scenario estimate does not take into consideration the fact that other paper recyclers may be able to recycle all or a portion of this 660 tons per day of excess waste paper, if, indeed, some paper recyclers go out of business. |
| M-8 | Your comment is noted. Please refer to the response for comment 49-3. |

000631

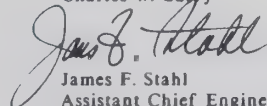
M-8
cont

recovery from must-burn combustion processes" contained in Draft AQMP Appendix IV-B - Tier III Control Strategy: Energy Future. It should also be noted that placement of the digester gas in gas pipelines would be in conflict with the intent of recently adopted state legislation sponsored by Assemblyman Hayden, A.B. 4037.

The Sanitation Districts appreciate the opportunity to review the documents and would hope that our comments would be given due consideration as we mutually move forward to address the major issues related to the air, water, and land environments in the South Coast Air Basin.

Very truly yours,

Charles W. Carry



James F. Stahl
Assistant Chief Engineer and
Assistant General Manager

JFS:RHK:jac

000632

Assembly California Legislature

LUCILLE ROYBAL-ALLARD

ASSEMBLYWOMAN, EIGHTH DISTRICT

January 31, 1989

Ms. Suzanne Reed
Special Projects Coordinator
SCAQMD
9150 Flair Dr.
El Monte, CA 91731

RE: FINAL ENVIRONMENTAL IMPACT REPORT (EIR) ON THE
PROPOSED AIR QUALITY MANAGEMENT PLAN (AQMP)

Dear Ms. Reed,

Thank you for the opportunity to comment on the EIR for the proposed AQMP for the Los Angeles Air Basin. As an Assemblywoman representing an area situated at the center of this overpolluted air district, I support conscious efforts to clean our air. The proposed 20 year AQMP is an absolute necessity if we are to improve the air we breathe. Although it will mean changes in life styles and the manner in which we conduct business, it is time that we face this problem before it becomes an uncontrollable situation.

N-1

However, I do have a major concern with the study as it presently reads. There needs to be more discussion of the economic impact of the AQMP on minority groups. Many Latinos, Blacks, Native Americans and other minority groups are employed within the industries that may be affected most by the stringent measures called for in the AQMP. I ask that there be more research on the possibility of jobs that may be lost as a result of the AQMP. The question of how workers will be retrained and employed after such losses must be addressed.

N-2

I ask that an ongoing evaluation be conducted for each of the measures implemented under the plan. This ongoing evaluation should reflect the potential economic impacts of the plan on minority communities. This most essential not only for my constituency but for also for other minority and low income regions within the Air District.

Committees
Health
Labor & Employment
Local Government
Utilities & Commerce
Committee on Immigration
in the Workplace Chair
Committee on Safety
in the Workplace
Subcommittee on State
Local Relations
Select Committee on
Sexual Assault Victims
Assistance Chair
Select Committee on
Youth
Joint Committee on Refugee
Resettlement International
Migrant and Cooperative
Development
Commission of the Californias

RESPONSES TO COMMENTS
LUCILLE ROYBAL-ALLARD (1/31/89)
COMMENT LETTER N

N-1

Economic impacts of the AQMP are discussed in Appendix F of the December, 1988 EIR. Also, please refer to the responses for comments G-157 and D-1.

N-2

Your comment is noted. Each plan and rule developed to implement the AQMP will be subjected to separate environmental impact analysis under CEQA. This analysis will include economic impacts in accordance with CEQA guidelines.

000633

Once again, thank you for the opportunity to comment on
the EIR.

Sincerely,

Lucille Roybal-Allard
LUCILLE ROYBAL-ALLARD
Assemblywoman, 56th District

000634



ADDRESS ALL COMMUNICATIONS
TO THE COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO CALIFORNIA 94102
TELEPHONE: (415) 557

Public Utilities Commission

STATE OF CALIFORNIA

COMMISSIONER

February 1, 1989

Brian W. Farris
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Dear Mr. Farris:

The California Public Utilities Commission appreciates the opportunity to comment on the new material in the draft Final Environmental Impact Report for the District's proposed Air Quality Management Plan.

1. The Final EIR has incorporated substantial changes from the original Air Quality Management Plan (AQMP) in the assumptions concerning the impacts on electricity. The proposed modifications to the Draft 1988 Air Quality Management Plan, issued in December 1988, contain a short explanation of the new assumptions for electricity capacity demand and supply. The original plan projected a need for an additional 45,000 MW of electrical capacity. The modifications now project that there will only be a need for 9,200 MW. The dramatic decrease is explained as the result of the new analysis including the air quality modeling control measures, the SCAG energy conservation measures, and the vehicle miles traveled controls. The discussion of these revised electricity demands recognizes the difficulties in projecting supply/demand forecasts, and states that they are only a starting point for further analysis. The plan calls for forming an energy task force to work on further refining the forecasts and the need for new capacity.

o The CPUC is concerned about the changes in the forecasts for capacity needs. The assumptions regarding the potential for conservation and load management savings appear to be optimistic, given that the AQMP does not lay out how these savings will be achieved. Has there been any analysis as to the load savings available from greater mandatory efficiency standards per the CEC, from increased utility conservation programs, or from other mechanisms? The response in the Final EIR to CPUC comments on conservation and load management does not acknowledge the limitations which we pointed out in the potential savings under current programs. The reduction in capacity needs relies even more on conservation savings than does the original plan. In addition, the future availability of out-of-state power is a much-debated subject at this time, with considerable uncertainty about how much will be available and from which regions. The CPUC reaffirms its commitment to work with an energy task force in establishing a realistic assessment of energy needs related to the AQMP.

RESPONSES TO COMMENTS PUBLIC UTILITY COMMISSION (2/1/89) COMMENT LETTER O

O-1

The electrification demand estimate has been revised downward also because several areas of electrification have now been omitted, for example, residential and commercial electrification. The potential power supply matrix for the Basin includes 1900 MW of daytime demand reduction and 900 MW of nighttime demand reduction. These reductions are far less than the full amount of cost effective demand reduction potential, compared to the cost of constructing additional generation capacity. Electric energy conservation and demand reduction targets called for in the AQMP can be achieved by implementation of the energy conservation measures described in Appendix IV-G.

O-2

The District has not analyzed the load savings from specific conservation and demand management programs. These programs will be evaluated as part of the District's participation in the electrification task force. Refer to the response to Comment 4-13. It is recognized that additional conservation efforts will have to be defined and implemented.

O-3

Your comment is noted. The issues of land use impacts and electricity supply reliability associated with the siting of additional transmission lines will be considered by the electrification task force. Also, refer to the response to comment 2-10 regarding necessary assumptions. If out-of-state power is not available, the AQMP will have to be adjusted, as will other major programs that assume such power will be available. See also the responses to comments 2-9, 2-13 and Attachment 5.

000635

- O-3
cont
- o The need for additional energy from outside the basin, and the resulting need for new transmission facilities, will have significant impacts. The response in the Final EIR to the CPUC's comments on this subject minimize the importance which transmission siting would play. As the lead agency for the siting and environmental review of major new transmission facilities, the CPUC can assure the District that the siting of new transmission lines into the Los Angeles area will be very difficult and controversial. There are also serious reliability concerns for the utilities in relying too heavily on out-of-area generation sources and transmission. These issues will have to be addressed more seriously by the energy task force.
- O-4
2. There are still many unresolved issues related to the alternatives to the plan which the District has considered, including the modeling of the ROG-only approach. Both Southern California Edison Company and the Western States Petroleum Association are studying alternative combinations of control strategies which focus on ROG reduction over ROG/NOx. The Final EIR seems to conclude that this is not a viable alternative for achieving federal standards. However, the modeling of these alternatives has not been adequately completed.
- o The CPUC feels modeling of these alternatives should be completed before eliminating them from consideration. These plans offer tremendous cost savings, faster achievement of significant ozone reductions, and a better dispersion of ozone within the region. The CPUC encourages the SCAQMD to hold followup workshops on the modeling, such as the January 10th meeting.
- o Before any implementation of rules adopting the full control measures contained in the AQMP (and proposed modifications), the modeling of different combinations of control strategies should be completed. This could help save billions of dollars of investment in controls which may not be necessary.
- O-5
3. The Final EIR has done a much better job in identifying the costs of the proposed control strategies and in listing them in a single table. There are a large number of strategies for which cost estimates cannot be made at this time, as well as a number of others which may be considerably under or over the costs shown, given the dearth of information available at this time.
- O-6
- o The CPUC would once again encourage the SCAQMD to examine a strategy of implementing the most cost-effective measures first. In addition, as implementation rules are developed and new cost estimates are determined, the overall comparison of cost-effectiveness among different strategies should be continually reevaluated.
- O-4
- Refer to the responses to Comment 1-1, 2-1 and to Attachments 1 and 2 of this Addendum.
- O-5
- Your comment is noted. More precise estimated of the cost of control measures will be undertaken during the rule development process.
- O-6
- Your comment is noted and will be forwarded to the District Board in their consideration of the AQMP for adoption. This alternative is considered in Attachment 1. District policy does not attempt to equalize cost effectiveness across control measures. Rather, control measures are omitted or modified if analysis shows their cost effectiveness ratio to be too high. Refer to Tables A and B at the end of the responses to letter 7 for a ranking of control measures by cost effectiveness.

O-7 o The CPUC would like to incorporate air quality costs and benefits into evaluations of the cost-effectiveness of utility programs and investments. We believe that this can be a major contribution to assisting the District reach its goals. This will be difficult to do with any certainty if the SCAQMD implements, all at the same time, control strategies that vary widely in cost. The CPUC's evaluation would be much easier if the AQMP adopted an approach of implementing control strategies on a least-cost basis. This would give the CPUC confidence that the costs imposed upon utility ratepayers for air quality mitigation measures are consistent with the statutory mandate of our agency to ensure that the utilities provide reliable service at the lowest reasonable cost.

O-8 4. The CPUC is also concerned about the timing of the implementation of the control strategies which may be adopted in a final plan. The Final EIR states that each of the control strategies will go through a rulemaking proceeding before implementation. The CPUC would encourage the SCAQMD to remain flexible on the timing of implementation, in order to minimize economic impacts. For example, with measures that require considerable investment by the gas or electric utilities, the CPUC is concerned about the ratepayer shock that could occur if the investments happen all at once.

The CPUC hopes that the final EIR adopted for the District's AQMP will reflect these concerns, and we look forward to working with the District to refine further the energy and utility-related aspects of its plan.

Very truly yours,



R. Thomas Beach
Commissioner Advisor

O-7 Your comment is noted and would contribute to internalizing air quality concerns (impacts, costs, etc.) into the PUC regulatory process. Refer to the responses to comments U6 and 7-3.

O-8 Your comment is noted. Refer to the response to comment 2-10 and to Tables G-1 through 6-9 of the AQMP. Time frames for implementation are goals and will be adjusted as appropriate to circumstances encountered during rule-making and/or implementation procedures.



LOS ANGELES TAXPAYERS ASSOCIATION

RESPONSES TO COMMENTS
LOS ANGELES TAXPAYERS ASSOCIATION (1/31/89)
COMMENT LETTER P

JAN 31 1989

January 31, 1989

Ms. Suzanne Reed
Special Projects Coordinator
Southern California Air Quality
Management District
1150 Main Drive
Burbank, California 91501

Dear Ms. Reed:

The Los Angeles Taxpayers Association is concerned about the adverse financial impact which the proposed AQMP will have upon local government and the taxpayers of the Los Angeles area. Attached is a statement which is essentially the industry position with which we concur.

Sincerely,

Arch D. Hardyment
Arch D. Hardyment
President

DLH:ra
Attachment

(Response to comments will begin on a following page.)

000638

LATAX LOS ANGELES TAXPAYERS ASSOCIATION

The Los Angeles Taxpayers Association wishes to express its concerns regarding several aspects of the Draft Air Quality Management Plan now under consideration by the South Coast Air Quality Management District and the Southern California Association of Governments.

- P-1 1. The Draft plan fails to adequately consider the economic implications or feasibility of many of the measures being proposed. As an example, mandating a changeover to methanol or other alternative fuel without specifying how such fuel would be supplied and at what environmental and economic cost undermines the whole foundation of the draft plan. Further the idea that a methanol changeover would be only an interim step before full electrification stretches the bounds of credibility.
- P-2
- P-3
- P-4 2. Given the draconian nature of many of the measures and strategies embodied in the draft AQMP, we do not believe that sufficient consideration has been given to the impact of these measures on local government -- both in terms of additional cost burdens and reductions in revenue.
- P-5 3. The reliance of the AQMP on unproven and/or prospective technology is also disturbing. Government, private industry and individual citizens are being asked to chart their futures on the basis of a highly speculative plan. In this regard the District has been overly proscriptive in its approach -- mandating technologies and strategies which may not be feasible. The interest of environmental improvement would be better served by an approach which set goals and standards, but left it up to the affected parties to find the most practical way to meet those standards. This alternative approach will encourage innovation in the private sector and allow flexibility in the implementation of the AQMP.
- P-6 4. Serious questions have been raised as to the timing of implementation for NOx and ROG measures and their impact on achieving attainment of ozone standards in the shortest possible timeframe. It would be our hope that the District will examine these questions carefully before adopting the AQMP and to the extent necessary leave flexibility in the AQMP for later resolution of these issues based on further study and understanding of the scientific issues. Likewise, the issue of PM₁₀ attainment remains unresolved in any of the plans set forth to date and it would, therefore, be constructive to adopt the AQMP in a manner which accommodates further advancement in PM₁₀ control strategies and technology.

- P-1 Economic impacts are addressed in Section 4-18 of the December, 1988 EIR and in Appendix F of the EIR. Environmental impacts of clean fuels are discussed in Section 4-14 of the December, 1988 EIR. Both of these topics are discussed further in responses to comments elsewhere in this Addendum.
- P-2 Methanol is only one of a number of clean fuels which could be used. References to clean fuels in the Plan are now changed to very low emitting vehicles/engines, so as to include all emission control technologies, and not only clean fuels. The definition for clean fuels in Tier I and II measures will be expanded to include all fuels, that on an equal Btu basis, produce lower levels of ROG, NOx, CO, and PM emissions compared to conventional fuels and are at least as clean as methanol when burned in an internal combustion engine, turbine, boiler, or other device as appropriate. The Tier III goal remains electric or essentially emission-free vehicles.
- P-3 Your comment is noted. Please refer to the response P-2.
- P-4 Economic impacts are discussed in Section 4-18 of the December, 1988 EIR and elsewhere in responses to comments in this Addendum. For many of the impacts of costs and revenue changes on local government, the data are not available. Your concern on the potential impacts on local government will be forwarded to the District Board for consideration in making its decision on the AQMP.
- P-5 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.
- P-6 Alternatives to the Plan, including those incorporating different timing for the implementation of NOx and ROG control measures, are discussed in Chapter 5 of the December, 1988 EIR and in a separate section of this Addendum. The issue of PM₁₀ attainment is discussed in Attachments 1 and 2.

000639

While the AQMP is not the last word on the subject of air quality improvement in Southern California, it is an important step and one which deserves serious discussion and consideration by the entire community. It is the hope of the Los Angeles Taxpayers Association that these comments will be helpful to the District in shaping a plan which does the best possible job of moving forward toward attainment of clean air standards in the south coast air basin.

000640

DONALD W. HARVEY
2038 PORT WEYBRIDGE PLACE
NEWPORT BEACH, CALIFORNIA 92660

2-1-89

RESPONSE TO COMMENTS
DONALD W. HARVEY (2/1/89)
COMMENT LETTER Q

To: Pat Nemeth, Deputy Executive Officer
of Planning and Analysis, AQMD
(Fax (818) 571 7650)

Subject: Comments on Air Quality Manage-
ment Plan EIR re Bike Commuting

Q-1

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. The Regional Mobility Plan supports this comment and includes a Non-Motorized Transportation Program (p.V-44) that calls for specific actions to encourage the development and/or enhancement of bikeway facilities.

The Plan should make provisions to fully utilize the potential of bike commuting.

Provisions should include the following:

- Municipalities should provide safe and convenient places for cyclists to ride. It is most important to provide bike lanes on all major streets. Bike trails are also desirable, but less important.
- Employers should provide:

- clothes lockers
- showers
- bike lockers (or other secure bike parking).

The potential of bike commuting is approximately as follows:

- $\frac{1}{2}\%$ to 1% of employees will commute by bike in the absence of any special provisions
- 5 to 10% if all the above provisions are made
- Over 10% with additional special provisions (e.g. towel service or nominal payments, such as \$1 per day, to bike commuters).

Bike commuting can contribute substantially to improving air quality, and its potential should be fully utilized.

2 of 2 Don Hamer 2

Q-1
cont

Q-2

Q-2

Your comment is noted and supported by the Regional Mobility Plan; please refer to the Non-Motorized Transportation Program.

0000642



600 South Commonwealth Avenue • Suite 1000 • Los Angeles • California • 90005 • 213/385-1000

RESPONSE TO COMMENTS
SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS (1/26/89)
LETTER R

January 26, 1989

Ms. Patricia Nemeth
Deputy Executive Officer
Office of Planning and Analysis
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Dear Pat:

Attached please find the additional comments on the draft Final Environmental Impact Report for the proposed Air Quality Management Plan upon its review by the transportation staff. We have previously forwarded the comments from our environmental and growth management staff to you on January 13, 1989. These additional comments, if incorporated, should remove any remaining inconsistencies between our plans. We hope that you will find these additional comments to be helpful in making the AQMP EIR a better document.

Thank you.

Sincerely,

Anne Baker
Director, Environmental Planning

Attachment

(Responses to comments will begin on a following page.)

000643

TRANSPORTATION DEPARTMENT
COMMENTS ON THE SCAQMD'S EIR

Section 4-1 - AIR QUALITY

TIER I PORTION.

R-1 P. 4-1-2: 3rd paragraph. SCAG is the source of mobile source emission inventory and should be referenced as well as the use of DTIM in the emissions modeling process.

P-2 P. 4-1-26: Tier I control measure description needs caveat found on top of page 52 of September SCAG 1988 draft of Transportation, Land Use and Energy Conservation Measures added, i.e., for transportation facility measures, the Tier I designation refers to a 20 year implementation scenario, constrained to available funding, and not to the five-year time frame cited in the text of the EIR.

R-3 P. 4-1-34 Transportation System and Land Use Setting: A greater sense of the degree of RMP related control measure Tier I implementation can be gathered from the descriptions of Tier I actions found in the above mentioned report. These descriptions of should be summarized in this setting and not just district control measures. A sense of the demand management program level of control is now missing.

P. 4-1-34 Transportation System and Land Use Impact: Emission reductions from mode shift strategies which reduce VMT are identified as a category and by Tier on page 259 of the SCAG Transportation, Land Use and Energy Conservation Control Measures - September 1988. Emission reductions from strategies which improve speeds are found in the Traffic Flow Improvements category on page 262 and from Nonrecurrent Congestion Relief on page 264, and from Freeway Capacity Enhancements on page 274. These figures should be incorporated into the impact discussion.

Tier II PORTION.

R-5 P. 4-1-36 Transportation Sector Setting: second line goal statement should be 1984 levels. It is not "maintaining vehicle usage" but achieving selected performance criteria at 1984 levels. Objective statements found in Chapter IV of the Draft RMP will be an accurate source for levels of increase in VMT and hours of delay. Another component missing is the commitment to implement only if funding is developed. See final comment on Tier One Setting above.

P. 4-1-36 Transportation Sector Impact: Specific emission reductions from the Tier II implementation of transportation programs in the RMP are identified on page 46 of the Draft EIR of the RMP. See also note on impact on Page 4-1-34 above.

R-1 Your comment is noted. This information will be included in the Final EIR after adoption of an AQMP.

R-2 Your comment is noted. This information will be included in the Final EIR after adoption of an AQMP.

R-3 Your comment is noted. As allowed under CEQA, technical information has been presented in appendices, which are widely available for public review.

R-4 Your comment is noted. As allowed under CEQA, technical information is presented in appendices, which are widely available for public review.

R-5 Your comment is noted. Corrections will appear in the Final EIR after adoption of an AQMP. The biennial revisions of the AQMP will track funding availability and make adjustments in the mix of transportation measures as appropriate.

R-6 Your comment is noted. The RMP EIR is incorporated by reference in the AQMP EIR, as allowed by CEQA.

000644

R-7 P.4-1-36 Transportation Sector Mitigation: Reference could be made to transportation facility project-specific impacts which can not be determined at this ~~stage~~ ^{time} which may need specific emission mitigation determined at that time. Note this is not stated in the RMP DEIR.

Section 4-2 Water Supply/ Water Quality

R-8 P. 4-2-1: There are no water quality impacts of the transportation control measures discussed in the AQMP EIR while the RMP DEIR has numerous pages and eight specific mitigation measures proposed. There should be greater consistency, at least mention the potential impact and refer to the RMP EIR for details. See pages 78 - 85 specifically in the RMP DEIR.

Section 4-3 Plant Life

R-9 P.4-3-1 SETTING: Reference to relevant setting descriptions identified on page 68 and Figure 15 of the RMP DEIR would be appropriate.

R-10 P. 4-3-1 IMPACT: Reference to the relevant impact descriptions identified on pages 70, 71 & 72 of the RMP's DEIR would be appropriate.

R-11 P.4-3-1 MITIGATION: Reference to relevant mitigation measures identified on pages 72 and 73 of the RMP's DEIR would be appropriate. The level of detail provided in the EIR should be enhanced. Note the RMP DEIR notes Significant Adverse Impacts After Mitigation for Biological Resources.

Section 4-4 Animal Life

R-12 P.4-4-1 SETTING: Reference to relevant setting descriptions identified on page 68, 69 and Figure 15 of the RMP DEIR would be appropriate.

R-13 P.4-4-1 IMPACT: Reference to the relevant impact descriptions identified on page 70, 71 & 72 of the RMP's DEIR would be appropriate.

R-14 P.4-4-1 MITIGATION: Reference to relevant mitigation measures identified on pages 72 and 73 of the RMP's DEIR would be appropriate. Note the RMP DEIR notes Significant Adverse Impacts After Mitigation for Biological Resources.

Section 4-5 Noise

R-15 P.4-5-1 SETTING: RMP DEIR page 100 has some language on transportation noise sources which could be included or referenced here.

R-16 P.4-5-1 IMPACT: Pages 102 through 105 describe noise impacts which could be referenced in this section. Certainly the emphasis in this write up for transportation should not be on the truck measures alone.

R-17 P.4-5-1 and 2 MITIGATION: Mitigation measures on page 106 of the RMP DEIR should be referenced. The last paragraph on page 4-5-2 should at least mention sound walls.

Section 4-6 Light and Glare

R-7 Your comment is noted. Since these specific projects are undefined at this time, discussion of mitigation measures would be speculative and no specific commitment to such measures can be made at this time.

R-8 Your comment is noted. The RMP EIR is incorporated by reference in the AQMP EIR, as allowed by CEQA. The impacts and mitigation measures identified therein can be considered part of this EIR. References will be included in the Final AQMP EIR to the "setting" sections of the RMP EIR addressing the transportation control measure impacts.

R-9 Your comment is noted. Page 3-29 of the December, 1988 EIR contains additional information on terrestrial biology. The references suggested will be incorporated in the Final EIR after adoption of an AQMP.

R-10 Your comment is noted. The RMP EIR is incorporated by reference in the AQMP EIR, as allowed by CEQA. However, specific references will be included as noted in response to comment R-9. The inclusion of this information does not alter the conclusions drawn in the EIR (refer to Table 6-1 in the December, 1988 EIR) concerning the significance of impacts or the feasibility or effectiveness of mitigation measures.

R-11 Please refer to the response to comment R-10.

R-12 Please refer to the response to comment R-10.

R-13 Please refer to the response to comment R-10.

R-14 Please refer to the response to comment R-10.

R-15 Please refer to the response to comment R-10.

R-16 Please refer to the response to comment R-10. Your comment regarding truck noise is correct.

R-17 Please refer to the response to comment R-10.

No comment

Section 4-7 Land Use

Tier I

Alternative Work Schedules and Locations

- R-18 [P.4-7-1 SETTING. Tier I portions of these measures are specified in SCAG's September 1988 ~~Transportation~~ Land Use and Energy Conservation Measures report. Some sense of what is Tier one - such as who will be initially expected to implement this - (e.g. local governments for their own employees) should be detailed here.
- R-19 [P.4-7-1 IMPACTS. 3rd and 4th paragraphs. This is not the impact from Tier I telecommunications implementation. It overstates the impacts of Tier I by including some Tier II impacts. Not all employment sectors will be affected equally. The next paragraph implies that this is counter to job/housing balance programs and is contrary to transit. This implies a total telecommunications by an individual rather than many telecommuting some of the time. There is a implied bias that is not accurate to the way the measure is written.

- R-20 [P.4-7-2 MITIGATION. The first two sentences are not mitigation but are how to implement the measure.

Mode Shift Strategies

- P-21 [P.4-7-2 SETTING. Again, this does not indicate the Tier I level of implementation (see earlier reference).
- P-22 [P.4-7-3 IMPACTS. This is very long term theoretical impact which would have to be associated as much with the financial element as the mode shift components and could only be a possible result of Tier II implementation. To imply that mode shift strategies have a greater emphasis on market forces than land values, housing prices or other forces is overstating the impact.

Freeway Capacity Enhancements

- P-23 [P.4-7-5 SETTING. The setting is misstated. Only the funded portions of the facilities portion, the "constrained program" should be referenced. Our latest mixed flow map should be used in lieu of a single mileage amount. Please use the phrase preferred strategy in this paragraph.
- R-24 [P.4-7-5 IMPACTS. Generalize the first statement - eliminate the 1840 lane-miles of freeway and the "based on Regional Mobility Strategy 3" should be replaced with the "constrained program of mixed flow improvements of the Preferred Strategy of the Regional Mobility Plan." Same for the next paragraph.

Tier II

- P-25 [All of the categories included in Tier I for transportation controls also

R-18 Please refer to the response to comment R-10.

R-19 Your comment is noted. The impacts discussed are generic and hence, encompass both Tier II as well as Tier I. Your comment regarding establishment of an appropriate balance between telecommuting and job centers is consistent with the findings in the EIR.

R-20 Your comment is noted. Please refer to Attachment 8 for the revised language of mitigation measures.

R-21 Your comment is noted. This information is contained in Appendix IV-G, as allowed by CEQA.

R-22 Your comment is noted. The passage does not imply that mode shift strategies have a greater emphasis on market forces than land values, housing prices or other forces.

R-23 Please refer to the response to comment R-10.

R-24 Please refer to the response to comment R-10.

R-25 Please refer to the response to comment R-10.

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have a Tier II component. To state that all the impact is from Tier I overstates the one and ignores the other. The unconstrained facility improvements need to be described under Tier II.

Section 4-8 Natural Resources

No comment

Section 4-9 Risk of Upset

No Comment

Section 4-10 Population

Alternative Work Schedules and Locations.

R-26 P.4-10-1 SETTING. This description is for the entire program. This is not all Tier I. Please use the descriptions in the previously mentioned SCAG document for Tier I level of implementation for this description. Establish a Tier II section.

Mode Shift Strategies

P-27 P.4-10-2 SETTING. Refer to the Preferred Strategy and the constrained portions of the HOV and transit improvements. Include the latest maps for these two improvements. Establish Tier I and Tier II sections for this.

P-28 P.4-10-3 MITIGATION. This should reference the RMP EIR. Why is HOV lane construction implied to be less disruptive than mixed flow lane construction? Reference the need for project level EIR's for specific mitigation to minimize impacts.

Capacity Enhancements

R-29 P.4-10-7 SETTING. Tier I and Tier II are not clarified here. Eliminate the 875 new lane-miles and use the constrained and unconstrained program descriptions described in comments on the "Land" section. Eliminate the reference to Strategy 3 and replace it with the "Preferred Strategy."

R-30 P.4-10-7 IMPACT. Eliminate the reference to 875 additional lane miles and refer to constrained/unconstrained mixed flow improvement map recommended for inclusion earlier. Establish a Tier II section.

P-31 P.4-10-7 MITIGATION. Reference the need for project level EIR's which would determine least disruptive alternatives.

Section 4-11 Housing

Freeway Capacity Enhancements

P-32 P.4-11-4 SETTING. Tier I and Tier II distinction is missing. Eliminate the 1840 new lane miles and refer to the constrained/unconstrained portions of the Mixed Flow improvements map. Eliminate the reference to Strategy 3 and replace it with the Preferred Strategy.

R-26 The description is meant to apply to both Tier I and Tier II. Since it is a generic description, no distinction between these two tiers is necessary. Impact forecasts can be appropriately accomplished from this approach.

R-27 Please refer to the response to comment R-10.

R-28 Your comment is noted. The RMP EIR is incorporated by reference in the AQMP EIR, as allowed by CEQA. The text does not imply that HOV construction is less disruptive than mixed flow lane construction. Please refer to the Executive Summary and responses to comments 2-5, 2-9, 2-12, and 2-13 regarding this EIR's relationship to future projects.

R-29 The description is meant to apply to both Tier I and Tier II. Since it is a generic description, no distinction between these two tiers is necessary. Changes will be incorporated as outlined in response to comment R-10.

R-30 Please refer to the response to comment R-29.

R-31 Please refer to the response to comment R-28.

R-32 Please refer to the response to comment R-29.

R-33 P.4-11-5 IMPACT. Tier I impacts would include the "new corridors" designated in the constrained program. Eliminate "Strategy 3" reference here and replace with the Preferred Strategy. Why are new corridors only noted. Availability of existing right of way on widenings may be as critical. Create the Tier II section.

R-34 P.4-11-5 MITIGATION. Mention project specific assessments and evaluations to identify the least disruptive alternative in this section. Create a Tier II section.

Section 4-12 Transportation

Alternative Work Schedules and Locations

P-35 P.4-12-3 SETTING. Tier I and Tier II distinction missing. See previous comments. The 60% and 20% would be Tier II. Look in SCAG control measure document for Tier I levels as mentioned above.

R-36 P.4-12-4 IMPACT. Net impact to transportation is positive.

R-37 P.4-12-5 SETTING AND IMPACT: A glaring inconsistency exists between SCAG's Employer Rideshare and Transit Incentives measure and the District's measure. SCAG's measure does not require employers of 25 or more persons to develop trip reduction programs.

Specifically SCAG calls for:

- o By ordinance/regulation by July 1, 1990, require trip reduction plans for facilities with tenants employing more than 100 employees.
- o By ordinance/regulation by January 1, 1991 require facilities employing 25 to 99 employees to disseminate information on trip reduction.
- o Evaluate effectiveness of reducing ordinance/regulation employee level threshold to 25+, by 1992.
- o If necessary, SCAQMD to expand Regulation XV to cover businesses with 25 or more employees by January 1, 1994 (Tier II).
- o SCAQMD, SCAG and local governments encourage formation of Transportation Management Associations.

For the sake of clarity, all references in the text of this measure to "trip reduction" should be amended to specify "vehicle trip reduction." This measure does not reduce person trips.

HOV Facilities

P-34 P.4-12-9 SETTING. The text should read as follows: The HOV facilities measure would provide 1285 miles of new HOV lanes to encourage commuters

R-33 The description is meant to apply to both Tier I and Tier II. Since it is a generic description, no distinction between these two tiers is necessary. New corridors are noted because they are expected to have the predominant impact on housing, compared to modifications to existing corridors.

R-34 Please refer to the response to comment R-29.

R-35 SCAG's definition of Tiers I and II differs from that of SCAQMD's. SCAG's definition relies on a specified number of years, while SCAQMD's distinguishes between the application of existing, commercialized technology (Tier I) and the commercialization of existing technology (Tier II). Please refer to the response to comment R-29.

R-36 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

R-37 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

R-38 Please refer to the response to comment R-10.

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and others to rideshare and to provide improved quality of express transit service. The resulting reduction in vehicle trips and shortening of the duration and extent of congestion will reduce vehicle emissions.

R-39 P.4-12-9 IMPACTS. Besides the discussion of carpool benefits, the text should also stress that HOV facilities will be used by transit vehicles, and that the improved travel speeds afforded by these facilities will result in improved quality of transit service. This improvement to the quality of transit service will contribute to the attainment of regional mode split goals.

R-40 The negative transportation impacts will result more in a disruption of regional traffic, rather than local traffic as stated in the text.

R-41 4-12-9 MITIGATION. As noted above, the disruptions will more likely be to regional than to local traffic. Beyond the tactics cited, construction mitigation programs must be developed by implementing agencies for projects that will have major traffic impacts. Such programs should include the establishment of park and ride facilities, whether temporary or permanent, vanpool and carpool support programs, and increased express bus service.

GOODS MOVEMENT.

p-42 p. 4-12-10 SETTING: The setting description in the text is based on an early draft of this measure. The measure has been substantially changed, principally to expand the accident reduction control method and to emphasize that the range of methods included in the measure constitute a measure of options rather than a specific set of required actions. The discussion in the setting section on accident reduction, incident response, and alternative (off-peak) delivery scheduling needs to be significantly expanded.

p-43 p. 4-12-11 IMPACT. The focus of the discussion of impacts needs to be expanded beyond the concentration on "reduction in truck traffic." The beneficial impacts of accident reductions programs, improved incident response and clean-up times, and off-peak deliveries need to be emphasized.

The negative impacts should be stated conditionally, depending on the specific package of control methods selected for implementation. For the truck operation restriction option of the measure, the significant direct and indirect costs identified in the Urban Gridlock Study should be cited.

R-44 p. 4-12-11 MITIGATION. Improved accident response time is a part of the measure itself, and should therefore not be listed as a mitigation. Discussion of mitigation of cost impacts needs to be included.

TRAFFIC FLOW IMPROVEMENTS.

P. 4-12-11 SETTING: No change required.

p-45 P. 4-12-12 IMPACT: There is little likelihood that this measure would result in significant traffic redistribution.

R-39 Your comment is noted. The District agrees that there is this dual benefit from HOV lanes and this change will be incorporated in the Final EIR as outlined in the response to comment R-10.

R-40 Your comment is noted. HOV lane construction is expected to have localized impacts on traffic, rather than impacts throughout the entire region.

R-41 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. If adopted, it will be added as a mitigation measure.

R-42 Please refer to the response to comments R-9 and R-10.

R-43 Please refer to the response to comments R-10 and R-28. It is recognized that forecasted impacts are potential in nature, but except for those impacts with clear engineering solutions (mitigation measures), it is not possible to conclude that the potential for significant adverse environmental impact can be eliminated.

R-44 Your comment is noted. Improved accident response time is a part of the measure itself, and not a mitigation. Under CEQA, a discussion of mitigation of cost impacts does not need to be included unless these costs cause physical environmental impacts. It is beyond the ability to forecast at this stage of review, but should be evaluated as the measure is addressed for implementation.

R-45 Your comment is noted and the recommended measure will be retained. See Attachment 8.

000649

p. 4-12-12 MITIGATION: No mitigation is required for this measure.

TRANSIT IMPROVEMENTS.

P-46 P.4-12-10 IMPACT: 1st paragraph numbers are incorrect. We do not designate type of improvement in new corridors but define these as medium and high capacity corridors. No specifics are included for numbers of park and ride. Suggest replacing existing language in this section as follows:

SETTING: (no change required)

IMPACT: The transit improvements measure, consists of two levels of improvements: a constrained program based on existing sources of funding, and an unconstrained program for which no funds can currently be projected, but which constitutes the majority of the improvements expected under the Regional Mobility Plan.

Under the constrained program, consisting of the Los Angeles Proposition A system, the Orange County Transitway program and the Riverside County Measure A program, a number of new transit services will be operating in the region by 2007, including: Metrorail Locally Preferred Alternative running from Union Station to North Hollywood and Wilshire to Western; light rail from Long Beach to Los Angeles, Norwalk to El Segundo, a ten mile extension of Metrorail either east or west, the San Fernando, Coast and Pasadena light rail lines, the Transitway in Orange County and Commuter rail in Riverside County.

Under the unconstrained program, it is proposed to extend these networks to include major transit facilities connecting Los Angeles with Ontario and with Santa Ana, to complete the Metrorail and Proposition A light rail systems, and to add approximately 3100 buses to the peak hour fleet. The unconstrained program contains an anticipated shortfall in capital investments for transit of \$18.1 billion.

Under the constrained scenario, transit would see an increase in mode share from below 3% at present to about 4%. Constrained transit program improvements would have only a modest impact on vehicle trips, either total or peak hour. With the completion of the unconstrained program, however, transit usage would rise to about 6% of all daily trips, including 1,400,000 work trips, representing a three-fold increase.

Benefits of these improvements will accrue primarily to residents living near the improved lines, as well as to those who continue to use the parallel auto facilities. To the extent that these serve areas of significant transit dependence, there will be a benefit to the transit dependent beyond that to the general population. However, the full impact of the Mobility Plan, which significantly exceeds those which can be achieved with existing funds, depend entirely on the ability of the Basin and the Southern California Region to meet the financial goals of that plan, and to cover the \$18.1 billion capital shortfall now projected.

R-46

Please refer to the response to comment R-10.

0000050

Negative impacts are primarily in the form of local, temporary traffic congestion from construction activities related to transit improvements, and temporary detours required.

MITIGATION: Where construction reduces capacity in transportation, increase transit availability in corridor for duration and, if appropriate, convert to permanent service on completion. On the whole, the plan will provide a significant net improvement to transportation in the Basin.

FREEWAY CAPACITY ENHANCEMENTS

p. 4-12-16 SETTING. No comment

p. 4-12-16 IMPACT. No comment.

R-47

Please refer to the response to comment R-41.

R-47

p. 4-12-17 MITIGATION. The mitigation section should, as in the discussion of the HOV measure, include the development of construction impact mitigation programs by implementing agencies for projects expected to create major traffic disruptions.

Section 4-13 Public Services Fire and Police Protection

No comment

Section 4-14 Energy No comment

Section 4-15 Utilities

No comment

Section 4-16 Recreation

No comment

Section 4-17 Human Health

Fine as is

Section 4-18 Economic Impacts

R 48

Please refer to the response to comment R-10.

P-48

4-18-32. Demand Management 1st paragraph second line: "make single occupan vehicle use more expensive"

R-49

4-18-34 Facility Capital Improvements Impact: Preferred Strategy Capital Costs are estimated at \$44 Billion, Revenues at \$21 Billion, while operating and maintenance costs and shortfalls are not mentioned. Source of funding statements do not reflect proposed financial element potential See attached tables from Financial Element of the RMP.

R-49

Corrections will be included in the Final EIR as outlined in the response to comment R-10. The RMP and RMP EIR are incorporated by reference in the AQMP EIR, as allowed by CEQA Refer to Appendix F to this Addendum for additional information on RMP costs.

[See if there are comments from the socioeconomic study which would be

relevant or from our Economics group.]

Section 4-19 Earth

No comment

Section 4-20 Aesthetic

- R-50 [P.4-20-1 SETTING. This could be beefed up a little from our setting section pages 86 - 88 and Figure 18.
- R-51 [P.4-20-1 IMPACTS. Please reference pages 90 - 95 of the RMP DEIR or summarize by sector the impacts mentioned on these pages.
- R-52 [P.4-20-1 MITIGATION. Incorporate mitigation on page 95 and 96 of the DEI RMP in this section.

Section 4-21 Archaeological/Paleontological/Historical Impacts

- R-53 [P.4-21-1 SETTING: Reference the RMP DEIR Figure 21.
- R-54 [P.4-21-1 IMPACTS: See pages 109, 110 & 11 for impacts in the RMP DEIR.
- R-55 [P.4-21-1 MITIGATION: Reference mitigation measures on pages 111 and 112 the RMP DEIR.

- R-50 Please refer to the response to comment R-10.
- R-51 Please refer to the response to comment R-10.
- R-52 Please refer to the response to comment R-10.
- R-53 Please refer to the response to comment R-10.
- R-54 Please refer to the response to comment R-10.
- R-55 Please refer to the response to comment R-10.

000652

Mode Shift Strategies

The following seven measures provide a menu of emission reduction efforts by which the goal of 6% VMT reduction can be achieved.

Employer Rideshare and Transit Incentives

SETTING: This measure requires trip reduction programs from public and private employers of ¹⁰⁰ 25 or more persons, as well as from building owners/managers of work places with multiple tenants employing ¹⁰⁰ 25 or more persons. These programs will reduce the number of vehicles on the road during peak hours, cut congestion, and thereby lower emissions.

IMPACT: Employer Rideshare and Transit Incentives would provide home-to-work trip reductions that result in less congestion and reduced emissions. It would enhance and extend the trip reduction benefits associated with District Regulation XV, which requires employers of 100 or more persons to develop and implement trip reduction plans designed to achieve a greater number of employees per vehicle during the morning and evening peak hours, by including ~~all employers of 25 or more persons.~~

^{BUILDING OWNERS/MANAGERS OF WORK PLACES WITH MULTIPLE TENANTS EMPLOYING 100 OR MORE PERSONS}
Transportation benefits associated with this measure include reduced peak hour congestion, more efficient use of transportation facilities, reduced parking needs for employers, and an increased number of commuters available for ridesharing matches. In the long run, this measure could motivate employer/employee matches that minimize commuting and facilitate ridesharing. The impacts of mode shift strategies are presented in greater detail in the Regional Mobility Plan DEIR (SCAG, 1988).

Transportation impacts from this measure include employee adjustment to alternative travel modes. In addition, smaller employers and multi-tenant buildings as well as businesses with flextime and alternative schedules may find it easier to comply with regulations designed to raise the Average Vehicle Ridership of the Basin's urban areas.

MITIGATION: Employee resistance to using alternative modes of travel can be counteracted by more convenient transit and ridesharing options, with the need to transfer or wait eliminated to the greatest degree possible. Financial motivations in the form of "parking rebates" or employer-paid transit passes can also ease resistance.

City of
West Hollywood



RESPONSE TO COMMENTS
CITY OF WEST HOLLYWOOD (1/25/89)
COMMENT LETTERS

January 25, 1989

Juzanne Reed
Special Projects Coordinator
South Coast Air Quality Management
District
9150 Flair Drive
El Monte, CA 91731

City of West Hollywood
Attn: Special Projects Coordinator
West Hollywood, CA 90069-4111
Tel: (310) 345-7475
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Dear Ms. Reed:

It is commendable that the AQMD is taking steps to alleviate the air quality problems that Los Angeles faces. Many of the measures are bold, counting on peoples' self-denied ability to adapt to changes. These will take a lot of courage to support as it can be expected that there will be much opposition to many of these proposals.

Realizing that others will concentrate on specific measures and how they may affect their agency or company (in fact, this has already been done for the City of West Hollywood by our Transportation Division Manager), I would rather comment on the major themes running through the DAQMP. For a plan can only be as good as the philosophy on which it is based. And while the major philosophy of cleaning up Los Angeles' air at perhaps great personal costs (in terms of change of habits, perceived loss of liberties, etc.), is noteworthy, there are some aspects of the DAQMP that I disagree with. Comments on these follow.

S-1

Exportation of Environmental Problems -- A large number of the measures, in fact those that are expected to produce some of the most significant changes, rely heavily on

S-1

Please refer to response for comments 1-45, 2-9, and 2-13. As noted in these responses, not all adverse impacts can be fully mitigated as noted in Table 6-1 of the December, 1988 EIR.

000654

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Community Development

S-2

the changing over to electric appliances and cars, or to ethanol powered vehicles. However, the generation of electricity produces almost as much air pollution as the use of gasoline and diesel engines, and the production of methanol requires the burning of coal and/or natural gas, thus producing significant amounts of air pollution. According to the FEIR, these effects will be mitigated by more energy-efficient appliances and automobiles as well as locating the generating stations outside of the SCAB.

However, there are no plans as to how to induce the production of energy-efficient appliances. Nor are the affects of increased air pollution in the areas where the generating plants are to be located addressed. Moving our air pollution from one location (Los Angeles) to another (wherever) does not solve the problem of poor air quality. All we would be doing is sweeping the dust under the carpet. Perhaps it would be best to concentrate on those measures that actually reduce air pollution instead of moving it.

S-3

Exchange of Pollutants -- Other measures involve switching from gasoline and diesel engines to methanol and other "clean" fuels. However, as the FEIR states, significant amounts of formaldehyde are produced as a result of the production and use of methanol. The impacts of increased formaldehyde in the SCAB are unknown at this time, and are being studied by the AQMB.

Until the time when the impact of replacement pollutants are known it seems unwise to implement measures that increase their

S-2

The specific measure of refining energy consumption will be defined as this measure is considered for implementation. Specific appliance standards will be involved out of evaluations conducted cooperatively with the California Energy Commission and the electric power generators and appliances manufactures. Please refer to the responses for comments 2-9 and 2-13 regarding out-of-basin and secondary or indirect impacts. Relocating measures of pollution is already happening as a result of EPA construction bans which prevent major stationary services from being sited in the Basin. Your comment regarding actual reductions in emissions is noted and, to the extent feasible, represents the Tier I or first level of effort directed toward solving the problem.

S-3

Please refer to discussion in Attachment 6 of this Addendum and responses for comments 2-8, 2-13, 2-79, and 2-150.

000655

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production.

S-4

Increased Use of Other Limited Resources -- Similarly, many of the measures will lead to and increased use of water, according to the FEIR. As water is a scarce resource in southern California, any increase or usage would be undesirable. While the FEIR states that the impacts could be mitigated through water conservation measures, no such measures are proposed, nor are their advent mandatory. Such a program, based on what could happen while not inducing those things to happen, may be not be the best strategy.

"Ain't No Such Thing as a Free Lunch" -- For too long people have exploited resources at far below their real cost, i.e., the cost of sustaining resources. (Witness the cost, and therefore the "shortage", of water in Southern California.) None of the proposed measures in the DAQMP seems to address this issue, though if the AQMD is serious about solving environmental problems it should be one of the major themes running through the plan. When someone has to pay the price for impacting others, they tend to be quick to stop or at least minimize their imposition.

S-6

Self-Sufficiency/Incentives -- Many of the measures rely heavily on local governments' participation -- in drafting ordinances and regulations, in enforcing compliance, in monitoring, etc.. This places a heavy burden on these governments. Where is the money to start time? How will this be paid for? Will it be possible for these cities to write the ordinances so that fines are imposed on

S-4

Please refer to the responses to comments S-2, 2-10 and 2-20.

S-5

Please refer to the responses to comments 2-10, 2-20, and 2-36. Each of the questions raised in your comment will be evaluated in detail when these measures are considered for implementation. Please refer to response for comment 7-3 for information on this process.

000656

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non-compliers, so that this system of policing pays for itself? Will cities have the legal authority to do this? If not, what will be the incentive for cities to spend their resources doing this? Sure, there's the thought of cleaner air and all, but when constituents have other priorities, city Halls tend to respond to those first.

Responsibilities -- Many of the measures, especially the earlier ones outlined in Appendix IV-A, do not specify responsibilities. For example, who shall be responsible for compliance to measure CM 888-A-6, "Substitute Solvents Used in Automobile Refinishing"? Perhaps these responsibilities are outlined in another document, but trying to get a complete list of AQMP-related documents from the AQMD has been difficult at best.

I hope that these comments are of help. I also hope that they will be addressed in future discussions concerning the AQMP.

Thank you very much,

Mark Winograd
Director
Department of Community Development

S-6

As these tactics are developed into specific rules, the responsibilities for implementation will be further refined and clarified, as will the responsibilities for environmental impact mitigation under the CEQA process. Specific responsibilities for implementing control measures in the AQMP are defined in Tables 6-1 through 6-9 of the Plan.

000657



Los Angeles Area
Chamber of Commerce

January 31, 1989

Brian Ferris
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Dear Mr. Ferris:

The following are comments from the Los Angeles Area Chamber of Commerce on the environmental impact report of the draft Air Quality Management Plan.

RESPONSES TO COMMENTS
LOS ANGELES AREA CHAMBER OF COMMERCE (1/31/89)
COMMENT LETTER T

- T-1 1. The Chamber believes that when the South Coast Air Quality Management District takes formal action to adopt the Plan on the 17th of March, it should also clearly indicate that the Plan will be a flexible document which will be subject to regular review; and that each control measure will be thoroughly studied before formal adoption. Pursuant to this belief, the Chamber urges the District to adopt the attached resolution as a definitive statement of intent on the District Board's position relative to the Air Quality Management Plan (see attachment 1).
2. The Chamber believes that the District should add language to page 4-3 of the draft 1988 AQMP (please see attachment 2). It is our belief that this additional language would bring the Plan into conformity with recently passed state legislation.
- T-2 3. The Chamber believes that the Air Quality Management District should thoroughly undertake the necessary modeling work to examine time and place strategies for air quality objectives.
- T-3 4. The Chamber requests that the Air Quality District provide a thorough analysis of the costs of the strategies contained in Tier 2 and Tier 3.
- T-4 5. The Chamber favors the concept of alternative fuels to achieve air quality objectives. However, we are strongly opposed to the Plan mandating a specific alternative fuel to the exclusion of other options.

- T-1 Your comment is noted and will be forwarded to the District Board for consideration on making its decision on the AQMP. In addition, each control measure will be closely examined during the rule-making and adoption process. Further evaluation of time and place strategies is also planned for future AQMP updates.
- T-2 Your comment is noted. For additional information regarding the modeling analysis for the Plan, please see Attachment 9 -- Urban Airshed Modeling.
- T-3 Providing cost figures for Tier II and Tier III measures would be highly speculative as Tier II measures are not commercially available at this time and Tier III measures have yet to be developed.
- T-4 The District is committed to examining and using any and all reasonable cleaner-burning fuel options. Chapter 4-14 of the EIR examines the potential benefits and health risks associated with the use of methanol, natural gas, propane, and oxygenated fuels. For information concerning the widespread use of methanol, please refer to Attachment 6 -- Methanol.

000658

Brian Ferris
January 31, 1989
Page 2

T-5

For additional information concerning the socioeconomic and cost impacts of the AQMP, please refer to Appendix F.

T-5

6. The Chamber believes that the District should undertake thorough socio-economic impact reports on any proposed rule or regulation contained in the Plan, prior to the adopt of those rules or regulations.

The Chamber strongly supports a program to achieve air quality standards in the basin; and hopes that the District, by adopting a flexible program, will indicate its commitment to working together with all affected parts of the community to achieve those goals.

Sincerely,


Ray Remy
President

RR/lep

000659

January 31, 1989

BACKGROUND:

In response to public inquiries, District Board Members and District staff have stated that AQMP is designed to be a road map for prospective rulemaking, and that the Plan will not preclude subsequent adjustments based on new information. In essence, the Plan commits to attainment of ambient air quality standards within 20 years. Although the Plan proposes three tiers of specific control measures that would be implemented during this 20 year period, the District has reassured the public that adoption and submittal of the Plan will not "lock in" the District to these exact control measures or to the precise schedule contained in the Plan. In fact, the District staff has characterized the Plan as a "flexible" document, which can be adjusted as specific measures are debated in future years and as new information becomes available. The Plan should contain appropriate language and procedures to facilitate future adjustments and to recognize their importance.

The following resolution is designed to clarify the Board's dual intention to commit the District to attain all federal ambient air quality standards within 20 years while preserving the flexibility to select whatever control measures achieve the greatest improvement in air quality at the least social and economic cost.

PROPOSED RESOLUTION:

WHEREAS the 1988 Air Quality Management Plan (the "AQMP" or "Plan") is a far-reaching document, which proposes significant social, economic and environmental change for the South Coast Air Basin over a period of twenty years,

WHEREAS the Board's primary intent in adopting the AQMP is to commit the SCAQMD to attain all federal ambient air quality standards by December 31, 2007,

WHEREAS this enormous task will require significant social and economic change and touch every aspect of life in Southern California,

WHEREAS additional evaluation and public input will be required for this Board to determine that sequence and combination of actual control measures which achieves the greatest air quality improvement at the lowest social and economic cost,

IT IS HEREBY RESOLVED that the 1988 Air Quality Management Plan represents a commitment by the South Coast Air Quality Management District to attain each of the federal air quality standards no later than December 31, 2007; that the adoption or submittal of the Plan shall not constitute a commitment by the District to adopt each and every control measure contained in the Plan or to achieve the overall emission reductions or rate of emission reductions projected by the Plan, provided that the District attains the Plan's overall air quality objectives; and that the public shall continue to be afforded the full opportunities for notice and comment on future rulemaking actions of the Governing Board, as provided by state or federal law.

093000

AMENDMENT TO THE DRAFT AQMP:

Add the following immediately above table 4-1 on page 4-3 of the Draft 1988 AQMP:

"Prior to adoption of the control measure in any Tier:

1. Control measures in that Tier shall be grouped according to criteria pollutant identified by each measure. Within each criteria pollutant category, according to the requirements of Health and Safety Code Section 40922 and 40923, each measure shall be ranked from the most to the least cost-effective pursuant to a uniform measure of cost analysis to be adopted by the District Governing Board.
2. A study shall be prepared of probable cumulative and incremental socioeconomic impact to the region if one or more control measure in each Tier were adopted. Following a noticed public hearing, the District Governing Board shall make express findings regarding the probable socioeconomic impact of such measures.
3. Following a noticed public hearing, the District Governing Board shall establish a schedule for adoption of the control measures in each Tier. The adoption schedule shall specify a list of regulatory measures scheduled for consideration during each calendar year pursuant of Health and Safety Code Section 40923. The sequence of adoption of control measures shall take into account a variety of factors, including the relative cost-effectiveness of air quality strategies, technological feasibility, total emission reduction potential, rate of reduction, socioeconomic impact, public acceptability, enforceability and the primary goal of healthful air as provided in Health and Safety Code Section 40910.

Consistent with Section 40920, the overriding objective of the control measure shall be to reduce overall population exposure to ambient pollutant levels in excess of air quality standards. No control measure shall be adopted which, when implemented, would delay or tend to delay the attainment (or interfere with the maintenance) of any state or federal standard in all or a portion of the air basin, or which would increase or tend to increase overall population exposure to ambient pollutant levels in excess of adopted state or federal standards, unless the District Governing Board expressly finds, following a noticed public hearing, that such a delay or increase is a necessary result of conflicting air quality strategies and is justified by a net overall reduction in population exposure to ambient pollutant levels in excess of adopted state or federal standards.

Prior to adoption of any control measures for the primary purpose of achieving air quality objectives other than the attainment of the ozone standard, a study shall be prepared, which, in addition to the factors listed above, evaluates the extent to which such measures would delay the attainment (or interfere with the maintenance) of the state or federal ozone standard or would, in the short- or long-term, increase population exposure to ambient ozone levels in excess of adopted state or federal standards. Following a noticed public hearing, the District Governing Board must find that the measures represent the most cost-effective alternatives and that they do not delay progress in meeting the requirement of Health and Safety Code Section 40920.

000661

Southern California Edison Company

P O BOX 800
2244 WALNUT GROVE AVENUE
ROSEMEAD CALIFORNIA 91770

MICHAEL M. HERTEL, Ph.D.
MANAGER OF ENVIRONMENTAL AFFAIRS

TELEPHONE
(618) 302 8458

December 15, 1988

RESPONSES TO COMMENTS
SOUTHERN CALIFORNIA EDISON (12/15/88)
COMMENT LETTER U

Dr. James M. Lents
Executive Officer
South Coast Air Quality
Management District
9150 Flair Drive
El Monte, CA 91731

Dear Dr. Lents:

SUBJECT: Comments on 1988 Air Quality Management Plan
and Environmental Impact Report

The Southern California Edison Company supports the District's goal to prepare an air quality plan for meeting federal clean air mandates. We understand the need for government, the District, business, and the public to work together to improve air quality for the least cost.

In keeping with our commitment to improved air quality and as part of the public comment process on the 1988 AQMP and EIR, we are submitting comments which include:

1. Edison's testimony before the Board;
2. Edison's revised Early-Attainment Alternative, which we request be thoroughly evaluated by the District, for meeting the federal ozone standard as much as 10 years earlier than the AQMP plan;
3. Our response to District staff comments contained in the "Proposed Modifications to the Draft 1988 AQMP" on Edison's PM-10 and ozone modeling for the AQMP;
4. Summary of potential cost and economic impacts of the AQMP on the Inland Empire, and Orange and Los Angeles Counties;

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5. Summary of Edison's PM-10 plan;
6. Our recommendation for a 90 day extension of the AMQP adoption date to allow the District, SCAG and others to thoroughly evaluate Edison's plan and correct deficiencies in the EIR and AQMP; and,
7. Edison's detailed comments on the Final EIR.

Edison's comments are contained in the enclosed attachments. Our comments focus on the presentation of a new Cost-Effective/Early-Attainment alternative and the need to address deficiencies in the final EIR.

We updated our computer model results and revised our Early-Attainment alternative based on the latest revisions to the AQMP by AQMD staff. These results support our contention that an alternative, focusing on ROG emission reductions, will achieve the federal ozone standard across the basin five to ten years earlier and cost almost two-thirds less than the District staff alternative.

Edison shares a common goal with the District and SCAG for improved air quality in the basin. We support the need to develop a workable air quality plan and believe we can meet this goal within a reasonable timeframe by working cooperatively.

Sincerely,



Michael M. Hertel

ATTACHMENTS

CC: Suzanne Reed, SCAQMD (25 copies, w/attachments) .
SCAQMD Board Members (w/attachments)

000663

DESCRIPTION OF MEASURES CONTAINED IN
SCE's PATH TO CLEAN AIR ALTERNATIVE

- 1) Edison's plan implements all the ROG only measures in Tier I. Examples are solvent reductions in domestic products (e.g., aerosol sprays, paint spray cans, etc.), ROG reductions in auto painting, controls on valves and pumps at refineries and oil fields, controls on rubber product manufacturing, more water-based paints, control of emissions from underarm products, reduced ethanol emissions from bakeries, controls on organic emissions from charbroilers, ROG reduction from aerospace coatings, and controls on reactive organics from breweries.
- 2) Edison's plan implements 18 out of 40 ROG/NOx measures in Tier I. Examples are measures requiring methanol fuel in switching locomotives, partial methanol conversion of truck fleets and passenger vehicles; SCAG transportation and land use measures such as telecommunication, van pool incentives, transit improvements (e.g., light rail), parking management, and better jobs-housing balance; and reduced emissions from new jet aircraft.
- 3) Edison's plan implements 8 ROG only measures out of Tier II. Examples are 50% elimination of reactive solvents and coatings, 20% methanol replacement of gasoline marketing, 20% methanol vehicle conversion, stricter motorcycle emission standards, and 70% use of methanol in heavy duty diesel trucks.
- 4) Edison's plan implements 5 out of 16 available ROG/NOx measures out of Tier II. Examples are 20% EV replacement of passenger vehicles, stricter emission standards for off road motorcycles, stricter controls on small miscellaneous sources (e.g., lawnmowers, small utility equipment, etc.), and tighter emission standards for pleasure boats.

000664

To Avoid Violations of Procedural Due Process
And State Law, The District Should Postpone
Adoption Of The AQMP For At Least 90 Days

- U-1 1. H & S Code § 40403 specifically requires that the District "make every effort to assure full public participation by all interested citizens" in the preparation and adoption of the AQMP.
- U-2 2. At virtually the last minute before the December 16 hearing set for adoption of the Plan, substantial new information and changes have been incorporated into the AQMP and the EIR. These include new economic analyses, new growth projections, changes in modeling assumptions and new model results.
- U-3 3. The final EIR was not available until December 5, only 11 days before the December 16 hearing. Important Appendixes to the final EIR were not available until even later. The revised AQMP was not available until December 6, only 10 days before December 16. The District's revised analysis of the financial impacts of the proposed AQMP is still not available. Basic fairness and due process principles require that interested parties must have more time to review and comment on these important new documents.
- U-4 4. The District's CEQA guidelines (§ 7.9) provide that the final EIR shall be subject to a period of public review. In a similar case (Butter v. Board of Supervisors, 122 C.A.3d 813, 1981), a 12 day public review period was found to be inadequate. Here, the District is considering a long-term Plan that would cost 12-21 billion dollars per year. The 11 days between the District's release of the incomplete final EIR and the December 16 hearing date is an unreasonably short public review period.
- U-5 5. A 90 day continuance would provide state and local agencies with an opportunity to correct other procedural defects:
- The ARB has failed to make adequate comments and findings on carrying capacity, model selection and other data contained in the AQMP prior to its adoption, as required under state law (H & S Code § 40463(c)).
 - The District Board, ARB, and SCAG have failed to hold a joint public meeting to identify and agree on important portions of the Plan, as required under state law. (H & S Code § 40467, Brown Act and State APA).

U-1 Your comment is noted. CEQA Section 15087 (c) permits public review periods ranging from 30 to 90 days with a standard 45-day review period for most documents. To date the AQMP EIR has been available for comment a total of 104 days. The dates are as follows:

- September 12, 1988 to October 27, 1988 -- Initial 45-day review
- December 2, 1988 to December 16, 1988--14-day review period for the December EIR
- December 19, 1988 to February 1, 1988--45-day review period for the December EIR

The public review and comment period for the AQMP EIR exceeds that required and allow by CEQA and CEQA Guidelines.

U-2 Please refer to the response for comment U-1.

U-3 Please refer to the response for comment U-1.

U-4 The time frame to respond to this Addendum is 15 days which exceeds that noted in your comment.

U-5 Please refer to the response for comment U-1. The 1988 AQMP development and review process represents the AQMD's most ambitious public outreach effort to date. AQMD and SCAG staff have held over 150 briefings since June 30, 1988 on the preliminary and draft plan. These briefings targeted elected officials and staff, other agencies, business interests, technical and professional organizations, environmental groups, and community groups representing a range of concerns and interests. The AQMD also has mounted an aggressive media campaign to make sure the general public is aware of the AQMP and overall agency air pollution control efforts.

It should be noted that adoption of the AQMP does not mean the end

000665

To Avoid Violations of Procedural Due Process
And State Law, The District Should Postpone
Adoption Of The AQMP For At Least 90 Days

- U-1
1. H & S Code § 40403 specifically requires that the District "make every effort to assure full public participation by all interested citizens" in the preparation and adoption of the AQMP.
- U-2
2. At virtually the last minute before the December 16 hearing set for adoption of the Plan, substantial new information and changes have been incorporated into the AQMP and the EIR. These include new economic analyses, new growth projections, changes in modeling assumptions and new model results.
- U-3
3. The final EIR was not available until December 5, only 11 days before the December 16 hearing. Important Appendixes to the final EIR were not available until even later. The revised AQMP was not available until December 6, only 10 days before December 16. The District's revised analysis of the financial impacts of the proposed AQMP is still not available. Basic fairness and due process principles require that interested parties must have more time to review and comment on these important new documents.
- U-4
4. The District's CEQA guidelines (§ 7.9) provide that the final EIR shall be subject to a period of public review. In a similar case (Sutter v. Board of Supervisors, 123 C.A.3d 813, 1981), a 12 day public review period was found to be inadequate. Here, the District is considering a long-term Plan that would cost 12-21 billion dollars per year. The 11 days between the District's release of the incomplete final EIR and the December 16 hearing date is an unreasonably short public review period.
- U-5
5. A 90 day continuance would provide state and local agencies with an opportunity to correct other procedural defects:
- The ARB has failed to make adequate comments and findings on carrying capacity, model selection and other data contained in the AQMP prior to its adoption, as required under state law (H & S Code § 40463(c)).
 - The District Board, ARB, and SCAG have failed to hold a joint public meeting to identify and agree on important portions of the Plan, as required under state law. (H & S Code § 40467, Brown Act and State APA).

of the public's involvement in air quality planning issues. In setting the plan adoption hearing date, the AQMD Board directed staff to work with SCAG staff to propose the establishment of regional task forces to help develop a framework for incorporating such considerations as jobs/housing balance, socioeconomic impact analysis and public participation/public education into the ongoing plan implementation and revision process. Such task forces, which would report back to the AQMD Board within 9 to 12 months, would supplement ongoing AQMD and SCAG advisory groups and public outreach activities. The task forces would include, at a minimum, representatives of large and small business, labor unions, ethnic minorities, academic and research institutions, homeowner and community groups, other agencies, and local government.

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power-plant NOx rule, is an upside down view of applicable state law. H & S Code § 40462 requires that the Plan achieve state standards at the earliest date achievable with the use of all reasonably available control measures. But these control measures must be evaluated to determine whether they can be validly adopted by the District under the other provisions of the H & S Code; and the overall strategy must comply with the priority for health concerns and the overriding need for rapid, cost-effective attainment.

6. The final EIR for the AQMP is not adequate. A number of fundamental substantive defects remain in the final EIR. These include:

- a. Inadequate consideration of alternatives.
- b. Inadequate consideration of economic impact, especially on low-income residents of the Basin.
- c. Inadequate justification of the purported benefits of the Plan.
- d. Inadequate discussion of the irretrievable commitment of scarce resources to the many speculative solutions included in the Plan, and inadequate consideration of competing social priorities.
- e. Inadequate discussion of the cost, technical aspects and environmental impacts of the individual control measures that are the basic foundation of the proposed AQMP.

7. Federal law preempts the AQMP as proposed. (Clean Air Act §§ 116, 172). The Clean Air Act prohibits the District from enacting provisions which do not achieve the ozone NAAQS as expeditiously as possible. The AQMP unreasonably delays the attainment date.

- U-6 Please refer to Attachments 1 and 2 which discuss alternatives considered by the District and to the responses for comments 1-1, 1-12, and 2-1.
- U-7 Please refer to the response to comment 2-36, to Appendix F, and to Section 4-18 of the December, 1988 EIR.
- U-8 Please refer to the responses for comments 3-45, 2-11, 2-129, and 2-144 which address forecasts.
- U-9 Please refer to the response for comment 1-24.
- U-10 Please refer to the response for comments 2-5, 2-12, and U-8 and its references.
- U-11 Please refer to the response for comments 2-1, 2-6, and 2-7 and to Attachments 1 and 2.

REVIEW OF
FINAL ENVIRONMENTAL IMPACT REPORT (FEIR)
1988 REVISION TO THE
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
AIR QUALITY MANAGEMENT PLAN

PREPARED FOR THE SOUTH COAST
AIR QUALITY MANAGEMENT DISTRICT

SUBMITTED BY SOUTHERN CALIFORNIA EDISON COMPANY

DECEMBER 14, 1988

899000

SUMMARY OF FEIR
DEFICIENCIES

A thorough review of the FEIR and accompanying appendices has revealed certain remaining inadequacies which make the FEIR an incomplete document, thus this FEIR is not in compliance with CEQA. The following five major inadequacies are evident:

- U-12 1. Significant changes in the Project which require reissuance of the Draft EIR.
- U-13 2. Inadequate Project description.
- U-14 3. Unidentified and/or unquantified significant environmental impacts.
- U-15 4. Inadequate analysis of secondary Project impacts.
- U-16 5. Inadequate evaluation of Project alternatives.

U-17 This review of the Final EIR finds that this document is not adequate as the basis for the SCAQMD to make a final decision concerning the adoption of the revised 1988 Air Quality Management Plan (AQMP).

The purpose of the FEIR is to provide information to public agency decision-makers about the potential environmental impacts of a project so that decisions are made which comply with the environmental protection policies enumerated in Sections 21000 and 21001 of CEQA. Section 21001.1 requires that projects proposed by public agencies such as the SCAQMD must undergo as thorough and detailed a review as projects sponsored by private entities. Section 21081 of CEQA requires that specific findings be made as part of the SCAQMD's approval; such findings can only be made if a comprehensive and detailed analysis of environmental impacts has been accomplished. Finally, Section 15121 of the State CEQA Guidelines notes that the contents of the EIR "may constitute evidence in the record to support the agency's action" where legal challenges to adoption of this AQMP are made. Thus not only is a complete EIR necessary to make a decision, it is also central to the defense of that decision.

U-12 The Board extended the comment period 45 days in response to concerns exposed by SCE and others.

U-13 The project description in the December, 1988 EIR contains all of the elements required in Section 15124 of the CEQA Guidelines. This section is backed up by the AQMP and appendices.

U-14 Please refer to the responses for comments 2-5, 2-9, 2-12, and 2-13. Where feasible, quantification has been provided, but in most cases quantification is not possible because of the stage of review.

U-15 Please refer to the December, 1988 EIR and the Addendum (specifically responses to comments 2-9 and 2-13) which amplify but do not change the findings in the December, 1988 EIR.

U-16 Please refer to the response for comment 2-1 and Attachments 1 and 2.

U-17 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

For example, regarding measure C-10 in the AQMP as evidenced in our comments dated 27 October 1987, we noticed substantial deficiencies in the District's DEIR and FEIR prepared for Rules 1134 and 1135.

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The Air Quality Management Plan 1988 Revision (AQMP) is offered by the South Coast Air Quality Management District (SCAQMD) and the Southern California Association of Governments (SCAG) as a plan to bring the Los Angeles basin into attainment with the Federal ambient air quality standards. While a Federal mandate (the Clean Air Act) requires compliance with ambient air quality standards through emissions reductions, the SCAQMD, as a California lead agency, is not relieved in any way from full compliance with requirements of the California Environmental Quality Act (CEQA). As a state lead agency taking a "discretionary" action, the SCAQMD is obligated, under CEQA guidelines Section 15382(i), to prepare an Environmental Impact Report (EIR) to fully inform the SCAQMD Governing Board of the full range of environmental impacts if the proposed revisions to the AQMP are adopted.

U-18 The combination of control measures proposed for implementation in the AQMP Revision will fundamentally change life in the Los Angeles region and directly affect the lives of more than 12 million people. To achieve the federally mandated air quality standards, some significant changes are necessary and unavoidable. The task of the FEIR is therefore far reaching in scope and proportion. It must fully and adequately inform the Governing Board of the technologies that can feasibly be implemented to achieve the necessary emissions reductions and in equal detail define the environmental consequences and economic burdens of implementing such control technologies. The current Final EIR does not adequately provide such information.

U-19 While it is recognized that the air quality problems of the Los Angeles basin are significant, the achievement of emissions reductions for the sake of the reduction itself does not, under CEQA, justify the implementation of control measures without defining and understanding their associated impacts. Similarly, use of future control technologies which are speculative does not relieve the FEIR's authors from exercising all reasonable means for defining and quantifying the impacts of such technologies. Unfortunately, the FEIR includes emissions reductions from future undeveloped technologies in achieving the standards, but does not enumerate their impacts.

U-18

Please refer to the responses for comments 2-5 and 2-12 and to the Executive Summary.

U-19

Please refer to the responses for comments 14-25 and U-18.

The following comments document major inadequacies of the Final EIR which will require significant revision before an adequate and sufficient basis is established for a determination regarding the approval of the Revision to the AQMP.

These comments take into account changes and revisions made to produce the FEIR.

1.0 SIGNIFICANT PROJECT CHANGES

The Final EIR includes several significant changes to the electrification strategy proposed in the Draft EIR. The requirement for additional energy supplies has been reduced between four and ten fold and the technology, assumed to make sufficient energy supplies available has not been properly evaluated to show its commercial scale technical feasibility. In light of these significant changes, the Final EIR should be reissued as a draft EIR to allow public review and comment as required by Public Resources Code Section 21092.1.

U-20 Please refer to the responses for comments U-1 and U-12.

2.0 INADEQUATE PROJECT DESCRIPTION

Section 15124(c) of the CEQA guidelines requires that a description of the project must be included in the FEIR that describes the technical, economic and environmental characteristics of the proposed project. The technical project in the case of the AQMP is composed of the individual control measures which have been grouped into three tiers. The specific control measures are described in Appendix IV-A and IV-B of the AQMP (including supplements). However, these documents do not fully or sufficiently describe the technical, economic or environmental characteristics of the individual control measures. What is given is a District biased description of each control measure that emphasizes the emissions reductions to be achieved, but includes little specific data concerning the economic and environmental characteristics and subsequent impacts of each individual control measure.¹

U-21 Please refer to the response for comment 1-16. The control measures have been described to the degree feasible at this stage of their review, that is, a goal oriented AQMP.

¹ It is this commenter's intent that these comments should be construed to apply to the description of each individual control measure as defined in Appendix IV of the AQMP.

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2.1 Insufficient Technical Description of Control Measures

In many cases control measures are stated in terms of the emissions reductions that are expected to occur but do not describe the specific technology to be used. In other cases, several alternative control methods are described but no analysis of the likely use of each alternative is made. Thus there is no direct linkage between the use of specific control technologies and the emission reductions that are assumed to occur. Without this linkage, for each control technology, the amount of emissions reductions must be considered speculative, rendering conclusions about environmental benefits from the AQMP unreliable and speculative.

Also, the numerical basis for some of the baseline emissions and associated emission reductions for the control measures are not adequately documented.

2.2 Insufficient Economic Description of Control Measures

Many control measures have been described in terms of the cost per ton for emissions reductions. Approximately 45% of the control measures do not include any cost data. Because no analysis of the probable use of specific control technology alternatives was undertaken, the cost of controls cannot be accurately estimated despite the inclusion of control technology costs in the Appendix IV descriptions of specific control technology. Without complete estimates of control technology costs, analysis of the costs versus benefits of the plan cannot be made.

2.3 Insufficient Environmental Description of Control Measures

The description of the some of the control measures note that they will create environmental impacts. To provide for an adequate environmental impact analysis, the DEIR must include an analysis that quantifies the specific environmental changes that implementation of each specific control measure will cause. It is critical that the creation of new or additional waste streams must be quantified (especially those that are noted in the AQMP, Appendix IV to be hazardous and toxic). Also, potential displacement of business operations, increased transportation, use of substituted unregulated materials (especially solvents) and other environmental affects of each control measure should be fully described.

U-22

Please refer to the response for comment 1-38. Emissions reductions have been forecasted with the best data presently available. Several measures are ill-defined, but this is not inconsistent with the planning stage of review that incorporates continuous revisions and updates of the Plan as a means of refining projections.

U-23

Please refer to the responses for comments 1-39 and 1-40.

U-24

Please refer to the responses for comments 1-41 and 2-12. The whole EIR and this Addendum provide the environmental database to the degree feasible at this stage of review. Please refer to the responses for comments 1-43, 1-45, 2-9, 2-13, and 2-44.

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U-24
cont

The FEIR, on page 161 of the response to comments, states that "The detailed impacts of individual control measures will be addressed during the rulemaking process." Thus, how can the economic and environmental impacts of these individual control measures and, more importantly, their potential cumulative impacts be adequately identified and addressed in this FEIR in order to comply with CEQA requirements? The FEIR does not adequately describe the control measures which constitute the AQMP nor does it adequately characterize the economic or environmental impacts associated with the implementation of these measures. Thus, the FEIR cannot identify significant effects of the project.

3.0 UNIDENTIFIED AND/OR UNQUANTIFIED SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE PROJECT

Section 15126 of the CEQA Guidelines requires that "[an] EIR shall identify and focus on the significant environmental effects of the proposed project." The FEIR fails to: (1) identify certain significant environmental effects and (2) to 'focus' or quantify the impacts of those environmental effects that are identified. This failure is especially critical where potential significant environmental effects have been identified; without identification or quantification, the degree to which mitigation measures can successfully reduce impacts to a level of insignificance cannot be determined. If significant impacts cannot be mitigated with certainty, they must be assumed to remain as significant, requiring the SCAQMD's Government Board to make findings of overriding consideration to approve the AQMP Revisions (CEQA Guidelines 15091(a)). Such findings of overriding consideration must be explicitly made by the Board and must "balance the benefits of a proposed project against its unavoidable environmental risks (CEQA Guidelines Section 15093(a))." The Guidelines also require that the findings "shall be supported by substantial evidence in the record" (CEQA Guidelines (15091(b)). Clearly, to make such a balancing determination, the benefits and risks must both be analyzed to a relatively equal level of detail. In the FEIR the benefits and environmental risks have not been quantified, leaving the Governing Board without sufficient basis for making findings of overriding consideration based on a balance of risks and benefits.

U-25

Please refer to the response for comment 1-42.

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U-25

For each of the Tier I, Tier II, and Tier III control measures, there are resultant impacts to air quality, water quality, solid waste, and other study areas (transportation, land use economics, etc.) which are not fully addressed in the FEIR.

Tier I Control Measures

U-26 [° Use of carbon adsorption technologies may produce by-product wastes that include hazardous and toxic materials. The type and quantity of these materials have not been completely identified or quantified. To the extent such materials are created, existing methods and means for disposal of such materials must be discussed to determine if the capacity for disposal of such materials exists and if the generation of new or increased hazardous materials waste streams is consistent with the region's Hazardous Waste Management Plan.

U-27 [The FEIR, on pages 60-66 of the responses to comments, addressed the concern regarding type and quantity of materials and wastes generated as a result of the use of carbon adsorption technology for one Tier I control measure - wood coating operations. From this one control measure there would be the potential for the generation of over 3 million gallons per year of liquid organic waste and over 600 tons per year of solid and/or hazardous waste. There are 21 other Tier I control measures which were not discussed regarding their potential environmental impacts. There are also numerous Tier II and Tier III control measures with impacts not discussed.

U-28 [° Requirement for additional solid waste disposal capacity will increase, as a direct result of the implementation of several of the proposed control measures. Estimates of the increased need for disposal capacity must be included in the FEIR. The FEIR must also evaluate the impact of additional disposal requirements to determine if they are consistent with the region's Solid Waste Management Plan.

U-26 Please refer to the response for comment 1-43.

U-27 Additional discussion of the environmental impacts of control measures appears in Appendix IV-A. With regard to the specificity of environmental impact analysis for other measures, please refer to the response for comment 2-12. Please refer also to the response for comment 2-44.

U-28 Please refer to the response for comment 1-45.

U-29

The FEIR, on pages 58 and 59 of response to comments, addressed solid waste disposal capacity. The information necessary as input to solid waste management plans, regarding increased solid/hazardous wastes resulting from proposed AQMP control measures, is not developed in this FIER. The comment states "Potential increases in landfill demand may constitute a significant adverse environmental impact." Yet, this significant impact is not further adequately addressed in the FEIR. The mitigation of this impact cannot simply be left to the individual affected counties to resolve. This does not serve the intent of CEQA, regarding mitigation of significant environmental impacts. [CEQA guidelines, Section 15126(c)].

U-30

- The use of alternative clean burning fuels, principally methanol, is identified as a component of control measures for stationary sources and in the transportation sector (FEIR, pgs. 4-1-30, 4-1-33). The quantities of such fuel requirements are not estimated, nor is an analysis of the national production capacity necessary to make such an alternative actually feasible within the AQMP time frame included in the FEIR. Without such an analysis, the use of methanol as an alternative fuel must be considered as speculative and the resulting emissions reductions ascribed to its use discounted.

U-31

- Several of the control measures which increase production of solid wastes assume out-of-basin disposal of such wastes. In the case of Control Measure D-5, it is assumed that out-of-basin disposal will utilize transportation by electrified rail. No feasibility analysis of regional rail electrification has been included nor is any cost for rail electrification evaluated. In other cases, the increased number of vehicle trips must be estimated to determine impacts on the region's transportation system and associated air quality impacts.

U-32

U-29

Please refer to the responses for comments 1-45, 2-9, and 2-13. As noted in these responses, most impacts can be fully mitigated, but potential unavailable significant adverse impacts can not be excluded at this stage of review. Further mitigation through alternative site analyses or compensatory mitigation could be developed when specific projects are reviewed, but can not be assumed at this time.

U-30

Please refer to the response for comment 1-47.

U-31

Please refer to the responses for comments 1-48 and 2-76.

U-32

Please refer to the response for comment 1-48.

000076

Tier II Control Measures

U-33 ° The use of some clean fuels, specifically methanol, will require significantly greater volumes of fuel due to methanol's 50% lower energy content. As noted above, the production capacity to make such fuels available has not been analyzed. Therefore, the emissions reductions that are assumed to occur due to the use of such fuels must be discounted significantly in the absence of a fuels production feasibility analysis.

U-34 ° The sole environmental impact analysis for control measures directed at surface coating and solvent use is contained in a very brief qualitative discussion found in Appendix IV-C of the AQMP (pg. 4-4). This discussion contains no data defining the degree and nature of impacts that will arise from the additional measures to be implemented in Tier 2, yet additional potentially significant impacts are noted, specifically the potential for substitute materials which may be toxic to be utilized. A quantitative analysis of substitutes must be included in the FEIR.

Tier III Control Measures

U-35 The control strategy outlined for Tier III involves shifting from conventional sources of energy to electricity as a prime mover. The technical analysis supporting this control strategy is described in Appendix IV-B of the AQMP. This document includes estimates of the electricity energy required to shift different sectors (transportation, industry, residential, etc.) to partial or full utilization of electricity. However, this document and the FEIR fail to include any meaningful analysis of environmental impacts of partial or full electrification. The Appendix does provide minimal topical discussion of the generic impacts of different types of energy generation technologies. It does not include an analysis of the degree to which these technologies would be utilized to achieve the electrification required to meet Tier III emissions reductions goals and the environmental impacts that would arise from the use of these technologies as part of any of the electrification strategies defined in the Appendix analysis.

U-33 Please refer to the responses for comments 1-49, 2-9 (where the general impacts described apply to methanol facilities as well as power plants), 2-111, and 1-60.

U-34 Please refer to the responses for comments 1-50 and 2-122, to Appendix 3 at the end of Comment Letter 1, and to pages 4-17-5 through 4-17-6 of the December, 1988 EIR.

U-35 Please refer to the response for comment 1-51.

000677

U-35
cont

The FEIR is similarly devoid of any environmental impact analysis that quantifies or even estimates the order of magnitude of environmental impacts that would occur if even the transportation sector were electrified. Certainly data exist to estimate the degree of energy utilization. It follows that impact analysis could also be performed.

U-36

The FEIR recognizes that further studies are necessary in certain areas in order to fully assess the environmental impacts of implementing the Air Quality Management Plan (AQMP). Two examples of the need for further study involve the use of methanol fuels and the economic impacts of implementing Tier III control measures. On page 4-1-34 the FEIR states that "potential adverse impacts from the methanol fuel program are being investigated by the District". On page 4-18-39 the FEIR states "the economic impacts of the Tier III control strategies are the most profound of all those in the AQMP. However, since they rely on as yet-to-be available technologies, the specific nature of their economic impacts cannot be discerned completely, although generalizations about the type of economic impacts can be made." Clearly the FEIR contains insufficient information that is critical to meaningful evaluation of the proposed control technologies, especially those included in Tier III. Without the addition of this information the FEIR will remain incomplete. Edison is willing to work with the District to conduct these studies.

4.0 INADEQUATE ANALYSIS OF SECONDARY PROJECT IMPACTS

U-37

The CEQA guidelines, Section 15126 (a), require that "direct and indirect significant effects" of the proposed project must be analyzed in the FEIR (emphasis added). The FEIR fails to recognize and thus evaluate a broad range of environmental effects which would occur as a result of implementation of the Revised AQMP.

U-38

To achieve Tier III emissions reductions, major reliance is placed on electrification and the use of alternative fuels, principally methanol. Both of these strategies will require the construction of significant new energy production and distribution systems. The systems will include components within and beyond the Los Angeles basin. The construction and operation of these systems will be a major secondary impact of implementation of Tier II and Tier III Control Measures and must be identified and quantified before the FEIR or the AQMP Revision can be considered complete.

U-36

Please refer to the response for comment 1-53. CEQA Guidelines (Sections 15145 and 15146) require an agency to use "best efforts" to disclose all that it "reasonably can." For Tier III measures this is obviously very general data that will be expanded at future tiers of review.

U-37

Please refer to the response for comment 2-13.

U-38

Please refer to the responses for comments 1-25, 2-9, and 2-13 and to Attachments 5 and 6. Although substantial electricity conservation has been achieved, a large cost-effective potential remains. Utility programs could be instrumental in tapping this potential. With regard to transmission line impacts, please refer to the response for comment 1-57. The plan projects the development of a variety of new technologies, including non-traditional electric generation technologies. If these technologies do not develop rapidly enough to meet the AQMP goals, appropriate revisions to the AQMP will be made, on a biennial basis. Please refer also to the responses for comments U-29 through U-37.

4.1 Indirect Impacts of Electrification

The Final EIR reverses dramatically the District's forecast of the need for additional energy supplies to meet the electrification strategy. The DEIR forecast of 45,000 MW of new capacity has been reduced to 9,200 MW which are to be supplied largely by non-traditional energy sources which in some cases are not yet commercial scale technologies.

While the electrification strategy is an important element in meeting air quality standards, such a dramatic change is not supported by any analyses that demonstrates that this new plan is appropriate. A plan that contemplates an increase of 60 billion additional Kilowatt hours per year or more requires a multi-agency (CEC, CPUC, AQMD, SCAG, utilities, local agencies, etc.) integrated, programmatic assessment of environmental and energy impacts on the region and state from such a level of load growth. For example, the mitigation proposed to alleviate environmental impacts relies on the use of conservation as an energy generation strategy. The California Energy Commission energy forecasting process already accounts for conservation in its forecast of new electrical needs. Thus any conservation that would be used for the electrification strategy is incremental to the existing supply forecast. Additionally, each MW of conservation is getting increasingly more difficult to create casting doubt on the ability to provide another 2,800 MW, especially when per capita energy consumption is becoming increasingly more efficient.

For transmission impacts, the Final EIR makes an illogical argument. It recognizes that additional transmission facilities will be required because "the significantly greater quantities of electricity called for in the electrification strategy exceeds the design capacity of existing transmission lines" (FEIR page 4-15-6). Yet it also attempts to pass off these impacts by postulating that load management measures will shift the load to off peak and eliminate the need for additional transmission facilities. While this may occur to a limited extent for nighttime charging of electric vehicles, the strategy also calls for replacement of all internal combustion engines, rail electrification and electrification of many industrial facilities; none of which will operate exclusively during the low load period and many of which will require transmission and distribution facilities that do not presently exist.

000679

U-38
cont

The final EIR attempts to largely ignore the question of transmission system impacts by committing to "produce" enough additional electricity in the Los Angeles basin except for a small amount of Pacific Northwest hydro to avoid any new transmission lines. The Final EIR does not justify or provide any technical basis for assuming that such a supply could be produced from non-traditional alternative technologies.

4.2 Indirect Impacts of Methanol as an Alternative Fuel

Both the Tier II and Tier III control strategies include the use of alternative fuels, principally methanol for transportation and stationary sources. The FEIR implies that such fuel substitution on such a massive scale is both feasible and achievable with any supporting evidence.

U-39

A system of methanol production and distribution does not presently exist in the United States of any significant size. For methanol use to be practically implemented both production and distribution systems on the same magnitude as that which presently exists for petroleum based fuels must be created. The problem is compounded by the fact that methanol with its significantly lower heating value will require approximately twice as much fuel by volume for the petroleum based fuels that it replaces. In addition, methanol production is energy intensive.

U-39

Please refer to Attachment 6 and to the responses for comments U-30 and U-33.

U-40

If, in fact, regional centers outside Los Angeles were developed for fuel production, transportation systems including local delivery systems must still be developed. These systems would most likely be rail tankcar, pipeline or barge delivery to the Los Angeles area and pipeline and truck delivery within the basin. A number of secondary impacts would arise from such systems that have not but must be analyzed by the FEIR. These impacts include, but are not limited to, the development of right-of-ways for pipelines, significant new air emissions and vehicle trips from the delivery of fuels by truck, additional ship operations and the impacts of over 40 unit trains per day transiting the basin if just the fuel required for power plants were delivered by rail. All of these secondary impacts must be identified and evaluated if the use of methanol is assumed as an emissions control measure.

U-40

Please refer to Attachment 6 and to the responses for comments 2-9, 2-13, and U-39.

U-41

A number of studies have been conducted which discuss the feasibility of development of methanol production capacity at the national level.⁴ It is not likely that such production capacity would be constructed solely in response to the need of the Los Angeles basin except through government intervention. The objective of the AQMP is to be in compliance with the federal and state standards by the year 2007. Thus, if methanol fuels are to be a meaningful component of the AQMP, massive production capacity must begin construction in the next few years. The FEIR fails to address the mechanisms, both economic or regulatory that would cause such production capacity to begin construction or to assess the secondary environmental impacts of such production. Without such an analysis to determine if such production capacity will be available in the required time frame, the emission reductions associated with methanol use must be significantly discounted.

U-41

Please refer to Attachment 6 and to the response for comment 2-111.

5.0 PROJECT ALTERNATIVE EVALUATION

Section 15126(d) of the CEQA guidelines calls for an examination of alternatives "...which could feasibly attain the basic objectives of the project, and evaluate the comparative merits of the alternatives."

U-42

Please refer to response for comment U-6.

The FEIR states that "alternatives presented in the above section will not attain the ambient air quality standards as efficiently or effectively as the proposed AQMP" (FEIR, pg. 5-5). The FEIR provides no factual basis for this conclusion and includes no direct comparison of the merits of the alternatives and is thus insufficient to meet the requirements of CEQA.

U-42

⁴ While the FEIR notes that several other countries currently have production capacity available, it does not evaluate the actual capacity available and determine if this is sufficient to meet demand. In addition, sole reliance on international sources of fuel could place the entire economy of the Los Angeles basin in a strategically disadvantageous position. To assume international production as the source of supply requires that the FEIR also include an analysis if the secondary impacts of supply disruptions due to international events.

000681

5.1 Incomplete Analysis of Alternatives

The FEIR appears to assume that the potential emissions reductions from each of the proposed control measures will occur regardless of the control measure feasibility. The more realistic future will be that some control measures will result in the desired emissions reductions, while others will not so that the total emissions reductions achieved may be on the same level as one or more of the alternatives. This being the case, if an alternative is less environmentally damaging and provides the same benefits (emissions reductions), than the SCAQMD Governing Board must be so informed.

5.2 Evaluation of ROG Alternative

Southern California Edison, through extensive ozone air dispersion modeling, has demonstrated a feasible alternative which has not thoroughly been addressed in the FEIR. A Reactive Organic Gases (ROG) only emissions control strategy is mentioned in the FEIR, but this potential alternative is dismissed without adequate explanation. The FEIR should evaluate this ROG oriented alternative because EPA has recommended this as the preferred attainment strategy for areas like the Los Angeles Basin.

As it regards the ROG control alternative, the FEIR, on page 5-4, states that "District Staff have analyzed this proposed alternative and concluded that it will not meet the federal standards as claimed..." The FEIR, on page 5-5, further states that "The differences in classifications preclude comparison at the micro level for impact assessments." There are no data, documentation, or factual presentations in the FEIR to support the above statements by the SCAQMD. What quantitative analyses have the SCAQMD performed to support the above statements?

SCE's urban airshed model analysis found ROG reductions always resulted in ozone reductions; while NO_x reductions could result in either ozone increases or reductions. The FEIR's conclusion that the ROG alternative would not permit attainment of air quality standards is apparently made without substantial quantitative evidence and thus must be ignored.

U-42
cont

In spite of the FEIR's conclusion, the ROG only alternative certainly warrants further study by the South Coast Air Quality Management District as a viable project alternative. In fact, the AQMP, as currently implemented, does not show complete attainment of the federal ozone standard, so it is inconsistent to dismiss any alternative which may actually achieve better air quality than the preferred alternative.

In addition, the FEIR, on page 2-32, states that "The air quality impacts of this alternative have not been modeled, but the emission reduction shortfall would probably not allow for attainment of the ambient air quality standards." This statement clearly dismisses a potentially viable project alternative with implementing its proposed features.

Finally, the FEIR, on page 2-32, states that four sub-alternatives were identified, but only three alternatives are discussed.

6.0 THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

Section 15126(e) of the CEQA guidelines addresses this requirement of the DEIR. This section must "describe the cumulative and long-term effects of the proposed project which adversely affect the state of the environment." The purpose of this section is to inform decision-makers about not only the direct and indirect impacts of the project, but the effect of the project when its impacts, even if they are minor, are added to other contemporaneous projects to assure that incremental impacts from several separate projects do not overwhelm a region's resources. For such an analysis to take place quantification of project impacts is necessary.

The FEIR states "The implementation of air pollution control measures, especially for Tiers II and III, will cause massive infrastructure changes in the region. These changes could impact the ability of government to provide public services" (FEIR, pg. 6-21). This conclusion is certainly a possible outcome of implementation of the AQMP Revision. However, to be fully informed, the Governing Board must be provided with an analysis of the public service sector, especially utility waste management and transportation sectors ability to support implementation.

U-43

Please refer to the response for comment 1-66. The December, 1988 EIR incorporated discussions of the Growth Management and Regional Mobility Plans which are the only major plans contributing to regional cumulative air quality decisions. These EIRs have been incorporated by reference in this Addendum. Note that this Plan EIR is inherently cumulative in nature because of examines impacts from controlling air quality for the whole region.

U-43

U-44 The large-scale use of alternative fuels will cause impacts beyond the boundaries of the Basin. Various activities must be undertaken nationwide to provide these fuels. This will include the developing feedstocks such as natural gas and coal, refining the fuel, and providing an infrastructure for its transportation."

The FEIR inadequately describes these long-term effects. Massive infrastructure changes in the region warrant further study as to overall environmental impacts.

U-45 Further, this section of the FEIR, in Table 6-1, summarizes the AQMP impacts. In five issue areas the FEIR concludes that it is not currently known whether significant environmental impacts would be mitigated to insignificance. In 79 issue areas significant impacts are only partially mitigated. This indicates that the FEIR is not fully assessing the required mitigation measures to render certain impacts insignificant.

7.0 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE INVOLVED IN IMPLEMENTATION OF THE PROJECT

U-46 Section 15126(f) of the CEQA guidelines requires that "irretrievable commitments or resources should be evaluated to assure that such current consumption is justified." The FEIR, page 7-1, states that "Implementation of the AQMP will irreversibly commit the future generations to the use of an environment in the South Coast Air Basin which will be greatly changed from current conditions." These irreversible changes include use of significant amounts of non-renewable resources (land, money, manpower, energy and materials), increases in the cost of living and doing business in the Basin, and a basic disjunction between business operations and social conditions within the Basin as compared with the rest of the nation. These irretrievable commitments of resources described above have not been adequately evaluated as required by CEQA.

U-44 Please refer to the responses for comments 1-67, U-30, and U-33

U-45 An EIR is not required to demonstrate that all impacts are mitigated to insignificance. From impacts which can not be mitigated to insignificance, a statement of overriding considerations must be adopted by the District Board. Please refer to Attachment 8 for more information on mitigation measures.

U-46 Please refer to the response for comment 1-24.

000684

8.0 SPECIFIC COMMENTS ON THE DRAFT EIR FOR 1988 AQMP

The following detailed comments and Table 1 list changes and additions which are necessary for the Final EIR to be complete per CEQA guidelines.

CHAPTER 2 - PROJECT DESCRIPTION

*Page 2-6, Table 2-1:

This table shows a summary of baseline air emissions for the South Coast Air Basin.

- Comment: The sulfur oxide emissions change between 1985 and 2000 is incorrect (the correct value appears to be +12 tons/day). Also, the sulfur oxide emissions total for year 2010 is incorrect (139 vs. 141) and also the change between 1985 and 2010 is incorrect (18 vs. 28). "AQMP Target Emissions Reductions" data are not included in the table as stated on pg. 2-5.

*Pages 2-8 thru 2-28, Tables 2-14, 2-15 and 2-16:

These tables summarize emission reductions and emissions inventories.

- Comment: The emissions reductions shown in these tables do not correlate with the reductions described in pages 2-8 through 2-28 of the FEIR.

CHAPTER 3 - EXISTING AND FORECAST SETTING IN THE BASIN

No comments.

CHAPTER 4 - ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

*Page 4-1-7, Table 4-1.2:

Annual Average and 24-Hour Maximum PM₁₀ Mass Concentrations:

- Comment: Footnote f should read "mountains" and footnote g should insert "miles" between 110 and SW.

*Page 4-1-19, paragraph 1:

- Comment: Change 60 percent to 73 percent according to the District's emissions inventory.

U-47 Please refer to the response for comment 1-69.

U-48 Please refer to Appendix SCE 1 at the end of comment letter 1.

U-49 Your comment is noted and will be corrected in the Final EIR after an AQMP is adopted.

U-50 Please refer to the response for comment 1-84.

000685

*Page 4-1-27, paragraph 6:

Mitigation.

- U-51
- Comment: The health hazards and hazardous waste impacts of substitution of reactive solvents by exempt solvents are secondary project impacts which should be addressed in more detail than currently handled in the FEIR.

*Page 4-1-29, paragraph 2:

Mitigation.

- U-52
- Comment: Increased solid waste disposal impacts from FCC control measures are not adequately addressed as secondary project impacts in the FEIR.

*Page 4-1-30, paragraph 2:

Mitigation.

- U-53
- Comment: The increased NO_x emissions due to operation of afterburners are not addressed as secondary project impacts. These NO_x emissions may amount to a significant increase.

*Page 4-1-31, paragraph 1:

"Significant Reduction in NO_x"

- U-54
- Comment: This statement is untrue. It could increase ozone and is not needed for PM₁₀ if proper fugitive controls are implemented.

*Page 4-1-31, paragraph 4:

Impact.

- U-55
- Comment: The secondary impacts of transporting and disposing of biodegradable solid waste out of the Basin have not been addressed.

*Page 4-1-34, top of page, paragraph 6:

Motor Vehicles, Impact.

- U-56
- Comment: The FEIR states that "...the full impact of the increased formaldehyde emission is yet to be determined." This secondary impact is clearly not adequately addressed in this FEIR.

U-51 Please refer to Appendix SCE 3 at the end of these responses to comments.

U-52 Please refer to the responses for comments 1-86 and 2-13.

U-53 Please refer to the response for comment 1-87.

U-54 Please refer to the response for comment 1-88 and to Attachments 2 and 3.

U-55 Please refer to the responses for comments 1-48 and 2-76.

U-56 Please refer to Attachment 6 and to the responses for comments U-30 and U-33.

000086

*Page 4-1-34, paragraph 5:

Transportation System and Land Use.

- U-57 - Comment: Is it realistic to assume that a 5 percent reduction in passenger car registration will be effected by raising registration fees? This assumption needs to be documented or supported elsewhere.

*Page 4-2-4, paragraph 6:

Impact.

- U-58 - Comment: The liquid hazardous waste resulting from cleaning and regenerating carbon adsorbers has not been adequately addressed as a secondary project impact.

*Page 4-2-8, paragraph 5:

Impact.

- U-59 - Comment: This disposal of liquid wastes by slurring them into sewage treatment systems has not been adequately addressed as a secondary project impact. The FEIR states that another governmental agency should consider these impacts.

*Page 4-7-7, paragraph 3:

Electrification, Impact.

- U-60 - Comment: The electrification control measure will require additional transmission line capacity. The secondary impacts associated with new transmission and distribution line corridors have not been adequately addressed. Aggregated costs have not been addressed.

*Page 4-9-9, paragraph 2:

Mitigation.

- U-61 - Comment: The words "Clean Air Act" should be changed to "Superfund Amendments and Reauthorization Act".

*Page 4-14-26, paragraph 1:

Natural Gas Industry, Impact.

- U-62 - Comment: The FEIR states that "Increased demand for methanol could also increase the demand for coal, resulting in mining, transport, and processing impacts outside the Basin." The FEIR does not even cursorily address these secondary impacts which could result in significant environmental effects.

U-57

Please refer to the response for comment 1-93. Achieving the five percent goal may require other means. The specific items required to meet this goal will be developed when this measure is considered for implementation.

U-58

Please refer to Appendix SCE 4 at the end of comment letter 1 and to the response for comment 1-43.

U-59

Since these wastes are similar to those ordinarily handled by sewage treatment facilities, the only impact would be an increase in the waste volume to be treated. Treatment facilities would need to incorporate this increase in waste volume in their future expansion plans. Please refer to the response for comment 1-97.

U-60

Please refer to the responses for comments 1-57, 1-98, and U-38.

U-61

Your comment is noted and the change will be incorporated into the Final EIR.

U-62

Please refer to the responses for comments 2-9, U-30 and U-33.

*Page 4-14-26, paragraph 4:

Petroleum Industry, Impact.

U-63

- Comment: This scenario involves the elimination of petroleum fuels within the basin. Might this scenario involve the closure of petroleum refineries in the basin? The secondary impacts of this potentiality have not been addressed - housing, employment, economics, etc.

*Page 4-17-4, Table 4-17.1

Potential Impacts from Emission of Toxics.

U-64

- Comment: The potentially adverse impacts identified in this Table for solvents and coatings and alternative fuels have not been adequately addressed.

*Page 4-18-23, paragraph 5:

Tier III.

U-65

- Comment: The District's guidelines restate the requirement given in Section 15131 of the State's CEQA guidelines which also includes: "(b) Economic or social effects of a project may be used to determine the significance of physical changes caused by the project." (CEQA Guideline Section 15131). Throughout the EIR major physical alterations of the environment will occur which have direct economic consequences. CEQA Guidelines Section 15131 clearly provides for the use of economic and social measures to be used to determine the significance of these physical changes.

CHAPTER 5 - ALTERNATIVES TO THE PROPOSED PROJECT

*Page 5-4, paragraph 2:

Alternatives to the Proposed Project.

U-66

- Comment: The failure to adequately assess a feasible alternative - ROG only controls - has been mentioned and discussed in the critical inadequacies description of these comments.

*Page 5-4 to 5-5

Alternatives to the Proposed Project.

U-67

- Comment: Discussion of a new alternative, ROG Control Emphasis, in FEIR but was not referenced in DEIR.

U-63

Please refer to the response for comment 1-108. As currently evaluated, such closure is not projected to occur.

U-64

All categories of materials in table 4-17.1 show a positive potential impact, except "solvents and coatings" and "alternative fuels." For "solvents and coatings," the severity of any negative impact depends on the strategy or control measure in question. Mitigation measures can be chosen to minimize such impacts. For "alternate fuels," the potentially adverse impact of formaldehyde can be mitigated by promulgation of a formaldehyde standard by the Air Resources Board. Please refer to Attachment 6 for more information on the potential health impacts of methanol. Also, please refer to the response for comment 2-46.

U-65

Your comment is noted. Specific reference to such major physical alterations of the environment needs to be provided. Please refer to the response for comment 1-108.

U-66

Please refer to the response for comment 1-1 and to Attachments 1 and 2.

U-67

Your comment is noted. Please refer to Attachments 1 and 2.

000008

CHAPTER 6 - THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT
AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

*Page 6-1, paragraph 1:

Long-term Productivity.

- U-68 [- Comment: The failure to properly address the CEQA requirements of this section have been explained in the critical inadequacies section of these comments.

CHAPTER 7 - SIGNIFICANT IRREVERSIBLE CHANGES WHICH WOULD BE INVOLVED IN
IMPLEMENTATION OF THE PROPOSED AQMP

*Page 7-1, paragraph 1:

- U-69 [- Comment: The failure to properly address the CEQA requirements of this section have been explained in the critical inadequacies section of these comments.

*Appendix F - Direct and Indirect socioeconomic impacts of the AQMP (Dec. 1988).

- U-70 [- Comment: The final EIR contained a reference to the above Appendix F which was not released with the FEIR. X

U-68 Your comment is noted. Please refer to the response to comment 1-66.

U-69 Your comment is noted and the commentor is referred to these and other responses in this Addendum and in the December, 1988 EIR.

U-70 Appendix F was subsequently made available for review and comment from December 15, 1988 through February 1, 1988.

TABLE I

ANALYSIS DEFICIENCIES

TIER I, TIER II and TIER III CONTROL MEASURES

| Control Measure | Unidentified Direct Impacts | Unidentified Indirect Impacts | Other |
|----------------------------------|---|---|--|
| Surface Coating & Solvent Use | <ul style="list-style-type: none"> * Increases in solid/liquid hazardous wastes have not been quantified. p. A-4, A-5, A-6, A-15, A-22, A-50, A-53. * Increases in toxic air contaminants have not been quantified. p. A-18, A-30, A-37, A-44, A-57. * Coating reformulation could be less efficient leading to increased use. Increases are not quantified. p. A-7, A-9, A-30. * Natural gas consumption for additional incinerators for control measures is not quantified. p. A-18, A-24, A-50, A-53. * Emissions were not determined for a subset of domestic products, thus potential reductions for the total source category, p. A-46, are quantified. Need to quantify domestic products (underarm) emissions. | <ul style="list-style-type: none"> * Relocation of coating, shipbuilding, dry cleaning operations could have negative socioeconomic impacts, not quantified. p. A-57, A-24. | <ul style="list-style-type: none"> * Further analysis required for cost effectiveness A-5, -27, -64, -73 * Further analysis required for emissions reductions 88-A-20. |
| Petroleum & Gas Production | <ul style="list-style-type: none"> * Increases in solid/liquid hazardous and non-hazardous waste have not been quantified. p. B-26, 31, 33, 38. | <ul style="list-style-type: none"> * Increase in emissions if SMCB or SCR is used is not quantified. p. B-23, 51, 53. * Discuss impacts if methanol is to be used as clean fuel. p. B-23. | <ul style="list-style-type: none"> * Control measures for pleasure boat refueling operations should reflect the additional data (Addendum CMB-8-3) for control efficiencies. p. B-15. * Obtain better information re: gasoline service station in-use malfunction/mispractice rates for Phase I. p. B-6. * Further modeling may be required to quantify the temporal effect on criteria pollutants. p. 18 |

ANALYSIS DEFICIENCIES

TIER I, TIER II AND TIER III CONTROL MEASURES
(continued)

| Control Measure | Unidentified Direct Impacts | Unidentified Indirect Impacts | Other |
|--|--|--|---|
| Off-Road Vehicles | <ul style="list-style-type: none"> * Identify the "certain portion" of motorships affected by CM#88-1-1, p. 1-4 in order to obtain emissions reductions. * Identify the basis for the 17 percent NO_x emissions reductions for CM#88-1-4, p. 1-19. Is the 30 minute delay included in this basis? * Quantify the emissions reductions associated with electrification of certain rail operations, p. 1-10. | <ul style="list-style-type: none"> * Include the possibility of shift in marine vessel housekeeping jobs from contractors to crews in CM#88-1-3. Possible negative economic impacts, p. 1-16. | <ul style="list-style-type: none"> * Correct the typographical error in CM#88-1-6 ROG emissions reduction year 2000, p. 1-29. (Formerly a Tier I measure). |
| CM#88-T-1 (New Measure) | <ul style="list-style-type: none"> * Quantify the additional formaldehyde emissions resulting from the use of Methanol in diesel- or gasoline-powered vehicles. | | |
| CM#88-T-3 CM#88-T-4 (New Measures) | | | <ul style="list-style-type: none"> * Further analysis is required to estimate cost effectiveness for each measure. |
| Tier III (Solvents) | <ul style="list-style-type: none"> * Appendix Q-C, p. 4-2 states a 60% market penetration for solvent use alternative methods, however, no basis is given for this value, p. 4-2. Same comment for 80% value given for solvent reformulation; p. 4-2. Same comment for 80% value for. * Toxicity of substitute solvents has not been assessed (App. IV-C, p. 4-5). * Air quality impacts of afterburners or incinerators has not been assessed (App. IV-C, p. 4-5). | | <ul style="list-style-type: none"> * Economic impacts of solvent substitution or reformulation have not been addressed. (App. IV-C, p. 4-5). |

ANALYSIS DEFICIENCIES

TIER I, TIER II AND TIER III CONTROL MEASURES
(continued)

| Control Measure | Unidentified Direct Impacts | Unidentified Indirect Impacts | Other |
|---|--|---|---|
| Commercial & Industrial Processes | <ul style="list-style-type: none"> * Identify the basis for the 37% reduction efficiency for ROG in commercial bakeries. p. C-4. * Increases in liquid hazardous wastes have not been quantified. for rubber products. p. C-17. * Give basis for using 68% as NO_x reduction efficiency in Boilers, Steam Generators, and Process Boilers. p. C-30. | <ul style="list-style-type: none"> * Discuss the impacts due to char-broilers' relocation to avoid the capital equipment costs. p. C-13. * Woodworking: Will proposed control measure affect all operations or only the large ones? High capital equipment cost is involved. p. C-26. * Discuss impacts of methanol if used in small boilers. p. C-26. * Increases in ammonia and associated PM emissions have not been quantified. p. C-31. * Increase in CO emissions have not been quantified. p. C-34. | |
| Residential & Public Sectors | <ul style="list-style-type: none"> * Increases in solid/liquid waste have not been quantified. p. B-19 POTW. | | |
| Agriculture Processes | <ul style="list-style-type: none"> * Emissions due to the transport of manure out of Basin, not quantified. p. E-11. | | |
| Others | <ul style="list-style-type: none"> * Increases in solid/liquid waste for the treating of gaseous fuels p. F-10 have not been quantified; for liquid fuels p. F-16. * Identify potential capital costs for industry if certain exemptions in Rule 219 are eliminated. | | |
| Motor Vehicles | <ul style="list-style-type: none"> * Increases in toxic air contaminants (formaldehyde) have not been quantified if Methanol is used as a clean fuel. p. G-20. | | |
| Transportation System & Land Use | <ul style="list-style-type: none"> * Identify basis for why drive-thru idling CO emissions have been forecasted to drop 1159 t/d in the year 2000. p. H-6. | | * Determine cost effectiveness of CM#BB-M-2. |

MCCLINTOCK, KIRWAN, BENSHOOF, ROCHEFORT & WESTON

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RESPONSES TO COMMENTS
MCCLINTOCK, KIRWAN, BENSHOOF,
ROCHEFORT & WESTON (2/1/89)
COMMENT LETTER V

HAND DELIVERED

February 1, 1989

Mr. Brian Farris
Senior Air Quality Specialist
South Coast Air Quality
Management District
9150 Flair Drive
El Monte, California 91731

Re: EIR For Proposed 1988 Air Quality Management Plan

Dear Mr. Farris:

This letter presents Browning-Ferris Industries' (BFI) comments on the Environmental Impact Report (EIR) written for the 1988 Revision to the Air Quality Management Plan ("AQMP" or "Plan") developed jointly by the South Coast Air Quality Management District ("District") and the Southern California Association of Governments (SCAG).

Specifically, BFI opposes that portion of the AQMP which would require all biodegradable waste to be transported out of the District for disposal. Basically, the Plan envisions controlling landfill emissions from both public and private landfill facilities by transporting waste out of the District via a nonexistent rail system, to unknown destinations. The EIR, however, is deficient in informing the public and the District Governing Board about the environmental consequences of banning the disposal of biodegradable waste in the District. Therefore, we respectfully request that the portions of the AQMP which relate to out-of-basin transport of biodegradable solid waste be removed from the AQMP prior to its adoption.

Background

Out-of-basin transport of biodegradable solid waste is identified in the AQMP as a Tier I Control Measure. Therefore, the District believes this measure "can be adopted in the next five

V-1

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. As described in the Executive Summary (part of this Addendum under separate cover), the AQMP is similar to a General Plan. Thus, the depth of information and degree of detail in the evaluation are, of necessity, very general. The focus of the impact analysis is most often qualitative (not quantitative) and reflects the level of information available at this tier of review.

At this time, it is neither possible nor appropriate to speculate about emissions impacts from transporting wastes out of the Basin for the following reasons: responses to comments 1-43 and 1-45 indicate an increase of 61 percent in the volume of wastes projected for the Basin. However, this does not consider the effect of the AQMP on solid waste generation. As a result, it is unknown what the actual volume of solid wastes will be; it is unknown what percentage of these solid wastes will be disposed of in and out of the Basin; and it is unknown what volume of wastes generated will be recycled.

V-2

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

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Mr. Brian Farris
February 1, 1989
Page 2

v-2
cont

V-3

years."¹ According to the District, emissions generated from transporting waste to landfills and decomposing waste would be reduced and contribute to efforts to attain national ambient air quality standards. Based on figures contained in the AQMP, reactive organic gas (ROG) emission reductions of 6.4 tons per day (maximum) can be achieved by banning biodegradable solid waste disposal in the District.² However, this only represents approximately one-half of one percent of the 1246 tons per day ("tpd") of ROG contained in the current emissions inventory and does not consider any ancillary emissions increases that might occur from increased trucking, transfer station and long haul rail operations. The EIR, as required by state law, does not adequately analyze issues raised by this proposal.

EIR Requirements

V-4

The EIR falls short of the type and depth of analysis required by the California Environmental Quality Act ("CEQA"). Cal. Pub. Res. Code §§ 21000, et seq. The EIR must: (1) identify significant effects the proposed action will have on the environment, (2) identify ways to minimize any significant effects on the environment, and (3) describe alternatives to the proposed activity. See Title 14, California Code of Regulations (hereafter "CCR") Section 15121(a).

V-5

Direct and indirect significant environmental effects are to be clearly identified and described giving consideration to both short-term and long-term effects. This includes the resources involved in carrying out the project, changes induced in population distribution and concentrations, human use of the land, health and safety problems, and other aspects of the project including impacts on public services. 14 CCR Section 15126(a). Section 15125 of the CCR states that any EIR must also discuss inconsistencies between a proposed project and any other applicable general regional plans. To our knowledge, none of these considerations have been addressed by the EIR.

V-3

Please refer to the response to comment V-1, regarding the amount of information and the degree of detail required for a General Plan. In regard to the emissions increases associated with transport, the commentor assumes that emissions will increase as a result of out-of-Basin waste disposal. If truck fleets change over to clean fuels (methanol for example), there may be no net increase in vehicle emissions. In addition, electrification of the rail system may provide an alternative means of disposing of wastes. If wastes are transported out of the Basin via electric rail, transport emissions may actually decline. As stated above, it is not possible to quantify these emissions reduction impacts.

It should be noted that adoption of the AQMP does not mean the end of the public's involvement in air quality planning issues. As these control measures are examined as potential rules, any additional information which can be provided by representatives from industry would be appreciated. During the workshop and rule-making process, the District will be better able to quantify and refine the emissions reductions estimates of particular control measures.

V-4

Please refer to the response for comment V-1.

V-5

Please refer to the response for comment V-1. At this stage of the AQMP development, no conflicts between proposed control measures in the AQMP and regional laws or regulations have been identified. During the rule development process, much more detailed evaluations of individual measures will occur. If inconsistencies between a proposed measure and regional plans, laws or regulations are identified, the issue can be addressed at that time.

¹ Draft 1988 Air Quality Management Plan, pp. 4-1, September 1988.

² Draft Air Quality Management Plan 1988 Revision, Draft Appendix IV-A, Tier I and Tier II Control Measures (June 1988). The AQMP also expects a maximum of 2 tpd NO_x reductions created by ending the need to flare landfill gas. Id., at D-14 - D-16.

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The EIR Is Substantively Inadequate

- V-6 The EIR at page 4-13-3 elaborates on the AQMP control measure which would require "out-of-basin transport of biodegradable solid waste." The EIR mentions only the following negative impacts and does not attempt to qualify or quantify the severity of these impacts or discuss ways to mitigate them:
- V-7 - increased waste transfer traffic on streets, highways, and on rail corridors,
- V-8 - due to increased congestion, this traffic increases the potential for accidents and spills, and
- V-9 - jurisdictions adjacent to the Basin may resist siting landfills within their boundaries.
- V-10 Though the EIR recognizes these significant problems it suggests only that congestion can be mitigated through use of electrified railways and that the expected outcry from adjacent jurisdictions can be mitigated by effectively structuring economic incentives to encourage their accepting Los Angeles' waste.
- V-11 No serious alternatives to this proposed control measure are examined. Continued reliance on regional landfills within the Basin is not examined. Air quality impacts from additional vehicle miles traveled ("VMT") and congestion are not quantified nor examined. Such information is the essence of what CEQA requires of an EIR, yet, this EIR is silent on these issues.
- V-12 Below are questions raised by the AQMP which the EIR should, but does not, address:
- o What is the cost of electrifying rail lines?
 - o Who will pay that cost?
 - o When will electrification occur?
 - o Where will the electricity come from?
 - o What emissions are created from electrical generation facilities?
 - o Do electrified rail systems exist?

- V-6 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. Please refer to the responses for comments V-1, V-3, and V-5.
- V-7 Please refer to the response for comment #V-1.
- V-8 Please refer to the response for comment #V-1.
- V-9 Please refer to the responses for comments #V-1 and V-5.
- V-10 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.
- V-11 Your comment is noted. Please refer to the response for comment #V-1.
- V-12 Your comment is noted. Please refer to the responses for comments #V-1 and #V-3.

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- o How long to design, permit and construct electrified rail systems?
- o Can existing rail corridors bear this additional expected traffic?
- o Which neighborhoods will be selected as sites for waste transfer facilities?
- o What new emissions will occur by closing regional landfills and increasing trucking distances?
- o Will these emission increases cancel out or exceed the reductions resulting from closing regional landfills?
- o What is the benefit of reducing landfill emissions that are largely non-reactive methane?
- o Where and at what type of facility will the waste be separated into biodegradable and non-biodegradable portions? Could such facilities be sited and/or permitted in the Basin?
- o In which other jurisdictions will new disposal facilities be located?
- o Will fine particulate emissions be increased by additional handling and sorting of waste?

Resolution of these questions will impact the magnitude of the air quality benefit, if indeed there is any, to be realized from transporting our biodegradable waste out of the Basin to other jurisdictions. The analysis of the air quality benefit of this control measure only presents direct gains (on landfill sites) of banning further disposal. The EIR does not analyze negative ancillary impacts (e.g., additional vehicle miles traveled) of this control measure.

Response To Public Comments

The EIR inadequately responds to public comments submitted regarding banning disposal of biodegradable waste in the District and transporting such waste out of the District via electrified railines.

V-13

Your comment is noted and will be referred to the District Board for consideration in making its decision on the AQMP. Please refer to the response for comment #V-1.

V-14

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. Please refer to the response for comment #V-1.

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Mr. Brian Farris
February 1, 1989
Page 5

V-15

For example, public comment 4-1.19 in the EIR Appendices states, "Mobile source emissions from out of Basin transport of solid wastes are not considered." The District response states, "See Section 4-12 of the FEIR." A review of that section provides no enlightenment about the real magnitude of the air quality impact from this control measure.

Likewise, public comment 4-9.10 in the EIR Appendices states:

Additional solid waste disposal capacity will be needed as a result of implementing several of the AQMP control measures. These impacts need to be considered in view of the region's solid waste management plan. Coordination with county plans should be achieved.

The response states merely that:

Counties are . . . required to review and revise their solid waste management plans every three years to reflect prevailing conditions and any changes in state policy. . . . Potential increases in landfill demand may constitute a significant adverse environmental impact. Mitigation of this impact is within the jurisdiction of the local government solid waste planning agencies. Mitigation measures on landfills should be adopted by those agencies.

V-16

This type of response evidences the shortcomings of the EIR. First, it does not identify any method to minimize the magnitude of impacts from banning solid waste landfill disposal other than suggest that those impacts be dealt with by other government entities. Second, it provides no evidence of public, local government and state legislative involvement and consultation

V-15

Your comment is noted. Please refer to the responses for comments #V-1 and #V-3..

V-16 ,

Your comment is noted. Please refer to the response for comment #V-1.

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Mr. Brian Farris
February 1, 1989
Page 6

V-16
cont

as required by the Clean Air Act Amendments of 1977.³ Third, it evidences no analysis of the impacts caused by waste hauling trucks driving extra miles to dump loads. Fourth, it evidences no analysis of the negative air quality impacts which will result from added congestion produced by trucks having to haul the waste over greater distances. The overall effects of this proposed control measure must be analyzed so Board members can make an informed choice when voting on the AQMP.

BFI has performed some basic calculations on the air quality effects if 30 landfills are closed and trucks are required to travel extra miles to bring waste to a centralized location for processing and loading onto trains.

Air Quality Impact

V-17

We present the following rough estimates of increased vehicle emissions which may help the District, and others, to understand some of the air quality impacts of the District's proposal to ban biodegradable waste disposal in the South Coast Basin. We think the District should have performed this type of analysis since it graphically demonstrates what the real impact of this proposal would be. Surprisingly, review of the increased mobile source emissions alone shows a negative net air quality impact to be achieved by implementing this "control measure".

The first step in our calculation was to determine expected emission increases from closing one of BFI's landfills. This information can then be extrapolated to determine the cumulative air quality impact of closing the approximately 30

V-17

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. Please refer to the responses for comments # V-1, V-3, and V-5.

³ See, Clean Air Act Amendment of 1977, Section 172(b), 42 U.S.C. Section 7502(b) which require nonattainment plans to "evidence public, local government, state legislative involvement and consultation . . . of the plan provisions." Further, the Clean Air Act requires nonattainment plans to "include written evidence that the State, [and] the general purpose local government . . . have adopted by statute, regulation, ordinance, or other legally enforceable document the necessary requirements and schedules and timetables for compliance." (Emphasis added) 42 U.S.C. Section 7502(b)(10).

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Mr. Brian Farris
February 1, 1989
Page 7

V-18

Please refer to the responses for comments #V-1 and #V-3.

active landfills in our area.⁴ Once we determine the quantity of emission increases resulting from additional miles driven, a comparison can be made to the amount of emission decreases the District expects to gain by banning disposal of biodegradable waste.⁵

V-18

Based on information contained in an EIR for a typical District landfill,⁶ 2,385 truck trips per day are expected. The quantity of ROG and NO_x emissions per mile are known to be 0.00646 and 0.03794 pounds, respectively.⁷ Performing the calculations demonstrates that by closing just this one landfill, and if vehicles are required to travel merely 20 extra miles per trip to deliver the waste to a centralized location for processing, new mobile source emissions will be .15 tons per day ("tpd") of ROG⁸

⁴ For lack of detailed information on the other landfills, we assumed all landfills would require the same number of truck trips. A more detailed analysis using information available to the District could be used to refine this analysis.

⁵ The District's calculation of emission reductions gained by banning biodegradable waste disposal expressly do not account for extra vehicle miles traveled.

⁶ Environmental Impact Report for the Sunshine Canyon Landfill Extension, prepared by Ultrasystems, Inc. (January 1989).

⁷ This assumes emission standards of 1987 diesel trucks. Emissions will be going down in the future but these are the best emission factors available at this time.

⁸ For ROG:

$$\frac{2,385 \text{ trip}}{\text{day}} \cdot \frac{20 \text{ extra miles}}{\text{trip}} \cdot \frac{.00646 \text{ lbs. of ROG}}{\text{mile}} =$$
$$\frac{308 \text{ lbs of ROG}}{\text{day}} \cdot \frac{1 \text{ ton}}{2000 \text{ lbs}} = .15 \text{ ton of ROG per day}$$

If this .15 tpd of ROG is multiplied by the cumulative effect of closing 30 landfills, the expected ROG emissions increase from additional vehicle miles traveled is (30 x .15) 4.5 tpd.

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Mr. Brian Farris
February 1, 1989
Page 8

and .9 tpd of NO_x.⁹ When multiplied by the 30 landfills affected by this control measure, ROG increases would be 4.5 tons per day from extra VMTs (compared to 4 tpd expected reductions from closing landfills) and NO_x increases would be 27 tpd from VMTs (compared to 2 tpd expected reductions from closing landfills).

These calculations demonstrate that emissions could actually increase from this particular "control measure" proposed by the District due solely to increased truck emissions. We did not attempt to quantify emissions from transfer stations or railines.

We find it peculiar that the AQMP seeks to limit vehicle emissions by reducing VMTs with 20 different control strategies, yet would increase vehicle emissions by requiring waste haulers to transport their cargo over larger distances. See, AQMP, Transportation System and Land Use, at 4-20, 21.

Conclusions

The proposed control measure to ban biodegradable waste disposal in the Basin will actually increase overall emissions of two key pollutants (ROG and NO_x). Therefore, this control measure should not be adopted as part of the 1988 AQMP. Further, the AQMP and its EIR, even when taken as a whole, do not meet the requirements of either CEQA (they fail to address adequately both the real overall air quality impacts and ways to mitigate those impacts) or the Clean Air Act (they fail, among other things, to evidence the necessary commitments of other affected governmental entities to adopt legally enforceable laws to carry out the Plan) and, therefore, they cannot be approved by the Board.

Finally, mandating that future management and disposal of Los Angeles' biodegradable waste can be forced on unsuspecting

For NO_x:

$$\frac{2,385 \text{ trip}}{\text{day}} \cdot \frac{20 \text{ extra miles}}{\text{trip}} \cdot \frac{.03794 \text{ lbs. of NO}_x}{\text{mile}} =$$

$$\frac{1,810 \text{ lbs. of NO}_x}{\text{day}} \cdot \frac{1 \text{ ton}}{2000 \text{ lbs}} = .9 \text{ ton of NO}_x \text{ per day}$$

If this .9 tpd of NO_x is multiplied by the cumulative effect of closing 30 landfills, the expected NO_x emissions increase from additional vehicle miles traveled is (30 x .9) 27 tpd.

V-19

Please refer to the responses for comments #V-1 and #V-3.

V-20

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

V-18
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V-19

V-20

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Mr. Brian Farris
February 1, 1989
Page 9

neighbors is bad public policy. We create this waste, we should manage it. Handing our problems to our neighbors is simply bad precedent.

Very truly yours,

Sharon F. Rubalcava
Sharon F. Rubalcava, P.C.
McCLINTOCK, KIRWAN, BENSHOOF,
ROCHEFORT & WESTON

SFR:wbt

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10:00



City of Tustin

Community Development Department

RESPONSES TO COMMENTS
CITY OF TUSTIN (1/26/89)
COMMENT LETTER W

January 26, 1989

Mr. Brian W. Farris
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

SUBJECT: COMMENTS ON AIR QUALITY MANAGEMENT PLAN EIR

Dear Mr. Farris:

Attached to this letter is a copy of previous correspondence filed with your office regarding the subject project. Since the time line for receiving comments was extended, no new comments have been prepared by the City of Tustin. However, our previous comments still apply.

Please address all comments and concerns as detailed in the attached letter.

Please call if you have any questions.

Sincerely,
Christine Shingleton
Director of Community Development


Laura C. Kuhn
Senior Planner

CAS:LCK:jk

Attachment

W-1 to W-13 Please refer to the responses for comment letter E.

000702



City of Tustin

RONALD B. HOESTEREY, Mayor
URSULA E. KENNEDY, Mayor Pro Tem
RICHARD B. EDGAR, Council Member
JOHN KELLY, Council Member
EARL J. PRESCOTT, Council Member

WILLIAM A. HUSTON, City Manager

December 15, 1988

Ms. Sharon Reed
Special Projects Coordinator
South Coast Air Quality Management District
9150 Flair Drive
El Monte, California 91731

SUBJECT: COMMENTS ON DRAFT AIR QUALITY MANAGEMENT PLAN

Dear Ms. Reed:

W-1 This letter is in response to reviewing the 1988 Draft Air Quality Management Plan, its accompanying EIR and the proposed revisions to each of these documents. While it is quite clear that the Governing Board of the South Coast Air Quality Management District intends to adopt the Plan and EIR despite all of the local and county agency opposition, the City of Tustin wishes to request an extended review period and that additional information be provided to address the issues discussed herein. In light of the recent legal issues brought to the media from your counsel, when can we expect to hear word on the revised action plan?


W-2 In review of the response to comments on the EIR it was evident that many of the issues related to fiscal impact, socio-economic impacts and implementation measures are being deferred to a later time when rule adoption occurs. While this may be easier to do, it makes for a Plan which is poorly defended. Additionally, without thoughtful consideration of the impacts related to each measure, it will be extremely difficult to gain support for the Plan and could lead to failure to meet the attainment strategies. This is reminiscent of previous attempts to clean up the Basin's air.

W-3 It is important to note that everyone agrees that the intent of the Plan is good, but it must be prepared in a fashion which clearly spells out its fiscal and socio-economic impacts as well as provide an implementation and monitoring program. Without these elements, it will be extremely difficult to gain local agency support for the Plan.

December 15, 1988
Mrs. Sharon Reed
Comments on Draft AQMP
Page two

Attached to this letter are two items, Exhibit A is a listing of Tustin's specific comments and concerns on the revised Plan and Exhibit B is a copy of our previously filed comments which were not adequately addressed in the response to comments in the EIR. Prior to any action by the District or SCAG on this issue, the City of Tustin wishes to receive and review your response to our continuing concerns.

Sincerely,



Ursula Kennedy
Mayor

UK:LCK:pef:ts

Attachments

cc: SCAG Chairman

000704

Exhibit A

Comments on Revisions to 1988 AQMP

ENVIRONMENTAL:

1. The response to comments do not address our previous request for an implementation plan for each of the Plan's measures. A detailed analysis of how each of the implementation measures listed in Tier One and Tier Two should be provided.
- W-4 2. In response to AB3180-Cortese, the EIR should also include a monitoring device to assure compliance with each of the mitigation measures. A monitoring program for the Plan's success in pollution reduction should also be provided or discussed in the Plan.
- W-5 3. The fiscal and socio-economic impacts of each of the measures in all three tiers is not provided, just generally discussed. According to the City's understanding of CEQA and other state laws, these issues have yet to be adequately addressed to meet legal requirements. Since the Plan will become legally enforceable, it is important to provide this discussion so that each of the measures costs and benefits are appropriately considered.
- W-6 4. After thoughtful consideration and review of the Plan and EIR it is quite evident in the proposed revisions that the Draft EIR did not contain some of the Plan alternatives and economic information such as the Small Business Owners alternative and the economic information from USC. Under CEQA law, it is the City's understanding that additional review time is needed to consider this information.

PLAN MEASURES:

- W-7 1. Tier One-Control Measures:
 - a. The adoption of strict restrictions on the use of solvents, coatings and adhesives is provided as an important attainment measure. Are there adequate substitutes for household and

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industrial products that can be used to replace the restricted items? The Plan only eludes to their existence and does not provide any documentation or listing of these replacements.

b. In addition to the comment above, are there replacement products which can be used in dry cleaning operations, underarm products, "domestic products" and other items which are proposed to be restricted?

2. Tier Two-Control Targets:

W-8 a. The goals for attaining the use of alternative fuels by certain percentages for each type of vehicle is certainly well intended. However, no specific measures on how to achieve these goals are provided. Are there guaranteed commitments from the automotive industry to meet these goals? If not how can we expect to meet them?

W-9 b. As with the Tier One comments listed above, are there existing technology and/or products available to adequately replace the solvents, coatings and adhesives which emit Reactive Organic Gases?

3. Tier Three-Technological Breakthroughs:

W-10 a. All of the strategies discussed in this tier are difficult to comprehend, much less implement. Without the security of knowing whether or not these goals can be attained, how can we consider submitting them to the Environmental Protection Agency as measures for meeting the state and federal air quality requirements? Has there been a precedent set by another Air Quality Management District which uses the same strategy?

W-11 b. The use of clean fuel vehicles for all of the Basin is certainly a good idea, the question here is whether we can restrict regionalized travel. Since the use of such vehicles would be mandated in this area, how will interstate and interregional travel and commerce be affected? This seems more like a federal implementation measure rather than a regional one and would be very difficult to control.

GENERAL COMMENTS:

- W-12 1. The review periods used for this project (Plan and EIR) meet the State's requirements; however, considering the scale, regional impact and technical information and measures proposed in the Plan, it is not feasible for local agencies to respond adequately in the allowed time periods, especially for the revisions to the EIR and Plan. An additional 90 day should be provided for review and consideration of the Plan, EIR and there corresponding revisions.

- W-13 2. Many of the measures require implementation of new technology and/or restrictions on activities or uses which are currently in effect. Will the restrictions and technological changes be applied retroactively, or will existing uses and facilities be grandfathered? For example, will all new and existing drive-thru restaurants be banned, or only new ones? If these requirements are not applied retroactively, is it economically and legally equitable to restrict the rights of businesses and residents who are new to the area? While this grandfathering is common, the measures in the Plan are quite severe and impact a wide range of activities and uses. Some consideration of this issue should be provided.

LATHAM & WATKINS

ATTORNEYS AT LAW

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RESPONSES TO COMMENTS LATHAM & WATKINS, ATTORNEYS AT LAW (2/1/89) COMMENT LETTER X

February 1, 1989

Your comments are noted and we have responded with the following discussion. However, the comments made in your letter appear to be directed toward the AQMP rather than the EIR.

Mr. Brian Farris
Senior Air Quality Specialist A
South Coast Air Quality
Management District
9150 Flair Drive
El Monte, California 91731

Re: Air Quality Management Plan

Dear Mr. Farris:

The following comments are submitted on behalf of a group of aerospace and electronics companies, consisting of Hughes Aircraft Company, McDonnell Douglas Corporation, Northrop Corporation and Rockwell International, located in the Southern California area.

General Comments

Over the past several months, a clear choice has emerged between two alternative strategies for attaining the federal ozone air quality standard. The District proposal relies on three tiers of proposed control measures, which together would require the virtual elimination (i.e., an approximately 85% reduction) of both reactive organic gas (ROG) and nitrogen oxide (NOx) emissions. This approach (referred to hereafter as the combined strategy) would rely in significant part on a slate of currently technologically infeasible controls (i.e., Tier 3) for which no cost estimates are available.

The second approach, advocated primarily by Southern California Edison (SCE) and the Western States Petroleum Association (WSPA), relies primarily on ROG reductions to attain the ozone standard, and includes NOx reductions to the extent they are achieved by ROG reduction measures and are otherwise necessary to attain or maintain federal NO₂ and PM₁₀ standards. This ROG-emphasis approach would not require implementation of several NOx measures or

X-1

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. Substantial data were provided to support conclusions about impacts, particularly those related to air quality. As described in the Executive Summary (which appears under separate cover in this Addendum), the AQMP is similar to a General Plan. Thus the depth of information and degree of detail in the evaluation are, of necessity, very general. The focus of the impact analysis is most often qualitative (not quantitative) and reflects the level of information available at this tier of review.

Alternative strategies that were proposed for attaining ambient air quality standards were evaluated by the District at the request of Southern California Edison and WOGA (now WSPA). This information is contained in Attachment 1. Based on its evaluation, the District concluded that all ambient air quality standards cannot be attained by either the SCE or WOGA strategies, that adverse impacts would be reduced by these alternatives (including economic and socioeconomic impacts) and that earlier improvements identified for ozone will occur but are not as dramatic as claimed by SCE or WOGA.

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Mr. Brian Farris
February 1, 1989
Page 2

as great a reliance on Tier 3 ROG measures. Therefore, it is neither as speculative nor as costly as the District's proposal.

As a ROG source category, the aerospace industry is already making substantial strides toward reducing its solvent usage and its ROG emissions. However, the industry is concerned about the Board's choice of strategy because there is no disagreement that additional NOx reductions will require even greater ROG reductions in order to attain the ozone standard. These additional ROG reductions could only be obtained by such extreme and prohibitively expensive control measures as virtually eliminating industrial and domestic solvent use in the basin.

The essence of the ROG-emphasis approach is that the easiest way to reduce ozone formation is to remove the precursor which is the most limiting factor in the photochemical reaction in the Basin (i.e., ROG) rather than reducing both ROG and NOx at a similar rate. This approach is consistent with urban airshed modeling results for the representative ozone episode selected for modeling analysis by the District and SCE.

District staff did not quarrel with the modeling support for the ROG-emphasis approach at the December 17, 1988 hearing; but rather, they presented two arguments against that strategy. First, they argued that ozone air quality would be worse if the District were to fail to achieve all of the projected emission reductions under the ROG-emphasis approach than would be the case under the combined strategy approach. (This argument was delivered by Professor Gregory MacRae of Carnegie Mellon.) In other words, the consequences of an emissions reduction shortfall, they argued, would be less severe if the District set out to reduce ROG and NOx at the same time.

Even if the modeling analysis underlying this argument is correct, the argument is still flawed, because it fails to consider the relative likelihood of experiencing a shortfall under the alternative plans. Such failure is much more likely under the District's combined strategy because so many of the necessary measures have yet to be proven to be achievable. Other measures under the combined strategy face difficult political or jurisdictional hurdles. Furthermore the ROG-emphasis strategy has the advantage of reserving a large number of measures as contingency measures, which could be implemented if shortfalls occur. The more appropriate

X-2

See response to comment #1 above also see attachment 2 for ROG/NOx detailed analyses and attachment #8 for more modeling details.

000709

Mr. Brian Farris
February 1, 1989
Page 3

comparison then might be to say that, while the consequence of an emissions shortfall under the ROG-emphasis strategy may be somewhat more significant than under the combined strategy, the ROG-emphasis strategy has the substantial benefits of a much lower likelihood of experiencing a shortfall and a greater ability to adjust should a shortfall occur, by implementing contingency measures. On the whole, the District would preserve greater flexibility and improve measures of much lower total cost (economic and social) under the ROG-emphasis strategy.

X-2
4.1
The second District objection to the ROG-emphasis strategy is that it would not adequately address District concerns regarding visibility, NO₂, PM₁₀ and acid deposition. These are legitimate concerns for the Basin and it appears probable that the ROG-emphasis strategy would not provide as great a reduction in these areas as the combined strategy. Nevertheless, as SCE and WSFA have stated, the District retains the flexibility under a ROG-emphasis approach to implement NOx measures as needed to achieve these reductions. To date, however, the District has failed to demonstrate that the full extent of proposed NOx reductions is actually necessary to achieve the desired level of improvement in these areas. Furthermore, the District has wholly failed to address the fundamental question of whether the relative benefit in these areas offsets the higher economic total cost or the demonstrated delay in attaining the ozone standard (and the consequent detriment to public health) associated with the combined ROG/NOx strategy.

The choice between the ROG-emphasis and combined strategies is a difficult one. Selecting the ROG-emphasis approach, while reserving the Plan's NOx measures and most of the Tier 3 measures as contingency measures to respond to emission reduction shortfalls, or to address other air quality objectives, appears to be the best way for the Board to address all of the region's air quality, economic and social objectives.

We support the Los Angeles Chamber of Commerce proposed resolution and amendment to the Plan, which would expressly preserve the necessary flexibility in the Plan to take this suggested course.

Comments Regarding Specific Control Measures

The listed companies will reserve detailed comments on specific control measures until the District undertakes

000010

a. The District Should Preserve Regulatory Flexibility

X-3

The District is developing Proposed Rule 108. Your specific concerns will be addressed during the rule-making process.

X-3

While the AECF is not a listed item in the AQMP, it is vital to the District's ability to implement ever more stringent measures. In future rulemaking activities, we will urge the Board to preserve this regulatory option.

A significant percentage of work done by the aerospace industry in Southern California is research

Mr. Brian Farris
February 1, 1989
Page 5

and development. These activities usually involve small levels of emissions and highly irregular or intermittent activity. Often the nature and volume of this activity fluctuates as government funding and priorities change. Many of the research and development activities involve frequent modification to permit units. Although these activities do not constitute a large percentage of the permitted activities within the District, they can be important to the continued evolution of technology.

In recent years, we have discussed with District staff various means of ensuring that frequent equipment modifications can be made without the need for filing a separate permit application for each change. One such method is to issue a single permit for the research activity, taking into consideration the full range of potential emission increases that could occur due to modifications. Without such flexibility in the permit system, research and development activities could not continue in the Basin due to the practical and timing constraints that the permit process imposes.

As with the AECP, the flexible permit (for lack of a better description) is an emissions-neutral way to ensure that valuable business activities can continue in the Basin. Our fear is that the trend towards adopting increasingly more stringent control measures will encourage some to urge greater rigidity in the area of emission trading (the AECP) and permitting. Not only would such a move not yield additional emission reductions but it could also prevent otherwise beneficial business activities from continuing.

c. Categorization of Aerospace Activities

Since 1979, aerospace coating and solvent operations have been regulated by a series of coating rules only one of which (Rule 1124, "Aerospace Component Coating") addresses aerospace-specific activities. As a result, many aerospace electronics operations have been regulated by rules that do not "fit" very well. We are considering a recommendation that the District staff develop a rule that specifically addresses electronic component cleaning and coating activities, so that these operations can properly be evaluated in their own context. We are currently working with the District staff on revisions to Rule 1124, and on proposed new rules addressing the use of solvents and adhesives. We

X-4 Your comment is noted and will be forwarded to the District Board in making its decision on the AQMP.

X-5 Your comment is noted and will be forwarded to the District Board in making its decision on the AQMP.

000112

Mr. Brian Farris
February 1, 1989
Page 6

X-5

cont

expect that these rules will achieve additional ROG
emission reductions and will more accurately address
industry operations.

We appreciate the opportunity to provide these
comments and look forward to working with the District staff
as they develop specific rules.

Very truly yours,

Robert A. Wyman

Robert A. Wyman
of LATHAM & WATKINS

000713



OFFICE OF THE CITY MANAGER
ONE MANCHESTER BOULEVARD / P.O. BOX 6500 / INGLEWOOD, CALIF. 90301

RESPONSES TO COMMENTS
CITY OF INGLEWOOD (1/26/89)
COMMENT LETTER Y

January 26, 1989

South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Subject: Comments on the EIR for the Draft Air Quality Management Plan

Y-1

It is difficult to adequately respond to the AQMP, and its component Growth Management Plan and Regional Mobility Plan, when they address many significant land use and transportation issues in generalized terms. These plans call for local governments to "balance" housing and jobs within arbitrarily defined sub-regions, but the specific mechanisms to implement such schemes, or to enforce compliance in the future are left unaddressed.

Y-2

It is clear, however, that implementation of the Plan could impose significant costs upon many businesses in the region, and that these costs are likely to be passed on to the population as a whole. It is not clear that the resulting benefits in air quality would be outweighed by the costs.

Y-3

As an example, park and ride or car pooling incentives imposed upon Hollywood Park and the Forum might result in significant burdens on these businesses and their patrons. Attendance may suffer so much that the City would experience substantial reductions in general fund revenues. Would air quality benefits from these actions be greater than their costs?

Y-4

Without such issues being addressed with greater clarity and specificity, the AQMP cannot be adequately evaluated in terms of its physical, social and economic impacts upon local governments and communities. In addition, the EIR does not address how severely the region's economy and local economies could be adversely impacted if the goals and assumptions of the plan are not achieved.

Y-5

In summary, too much is assumed and too little is adequately addressed by the draft AQMP and its EIR to merit the adoption of either the EIR or any of the plans at this time.

Sincerely,

PDE:jb

OFFICE OF
PAUL D. ECKLES
CITY MANAGER

Y-1

Your comment is noted. As discussed in the Executive Summary (part of this addendum under separate cover), the AQMP is similar to a General Plan and the depth of information and degree of detail in the evaluation are, of necessity, very general. However, mechanisms to achieve job/housing balance have been discussed in SCAG's Draft Growth Management Plan (October, 1988). In addition, detailed environmental impacts of the job/housing balance strategy are addressed in SCAG's Draft EIR on the Growth Management Plan (October, 1988). Detailed benefits and costs of individual control measures, as well as their economic feasibility, will be addressed and assessed, as is appropriate, during the rule development process.

Y-2

Some industries will be impacted more than others. These impacts are discussed in Section 4-18 of the December, 1988 EIR. Additional economic impacts are addressed in the Appendix F (December, 1988). Whether control costs are passed on to the population depends on consumer response to increases in product prices. Although the Basin's air emission requirements are the most stringent in the nation, the Basin's economy has not lost its competitiveness and continues to grow, especially when compared with other regions of the nation. The Basin's market potential and its close interdependence with the economies of the Pacific rim nations suggest that business will continue to be attracted to the area.

Costs estimates have been developed for the majority of Tier I stationary control measures (see Appendix IV-A). Data for the

000774



CITY OF INGLEWOOD CALIFORNIA
ONE MANCHESTER BOULEVARD / P.O. BOX 6500 / INGLEWOOD CALIF 90301

January 26, 1989

South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Subject: Comments on the EIR for the Draft Air Quality Management Plan

Y-1

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Y-2

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Y-3

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Y-4

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Y-5

In summary, too much is assumed and too little is adequately addressed by the draft AQMP and its EIR to merit the adoption of either the EIR or any of the plans at this time.

Sincerely,

PDE:jb

OFFICE OF
PAUL D. ECKLES
CITY MANAGER

TELEPHONE (310) 312-1111

remaining control measures were not available during the preparation of the AQMP, but will be assembled, as is appropriate, during the development of individual control measures into rules. Just as the estimate of the AQMP's costs did not reflect all costs, the estimate of the AQMP dollar benefit did not consider all the pollution damage reductions. The benefit estimate included only reductions in air pollution damages to health, materials, forests, and agriculture. The damages were based on noncompliance with federal standards for two pollutants only: ozone and particulates. Indirect health costs, such as pain and discomfort, were not considered in calculating the benefit estimates. These could amount to 20 percent to 50 percent of the total health damage. Agricultural damages included damages to only four crops: dry beans, cotton, potatoes, and grapes. The benefits of air quality improvements to future generations is an intangible that also cannot be assessed in monetary value. The District has contracted with the California State University Fullerton Foundation to research and thoroughly evaluate the health benefits from improving air quality. As the results of this study become available, they will be used to revise and update the benefits of the AQMP.

Y-3

It is not the intent of the AQMP to impose control measures which could place a heavy burden on activities essential to sustain the economic viability of local jurisdictions. The District is willing to work with local governments to identify additional or alternative options for the implementation of control measures, as well as to consider other control measures which may supplement efforts towards air quality attainment. A number of AQMP proposals requests that local governments act as agents of change to bring about improvements in air quality needed to achieve federal standards. Many of these measures, included in the 1979 and 1982 plans and supported at the time by local governments, were developed with the intent that local jurisdictions enter into a partnership with the District. Hence, the District encourages an ongoing dialogue with elected officials to help overcome any existing impediments to implementation.

Y-4

Your comment is noted. Please refer to the responses for comments Y-1 and Y-2. If the AQMP is not implemented, the employment and population growth expected in the region will compound the Basin's air quality and traffic congestion problems significantly. Severe air pollution and congestion could discourage businesses and individuals

000115



CITY OF INGLEWOOD CALIFORNIA

ONE MANCHESTER BOULEVARD / P.O. BOX 6500 / INGLEWOOD CALIF. 90301

January 26, 1989

South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Subject: Comments on the EIR for the Draft Air Quality Management Plan

Y-1

It is difficult to adequately respond to the AQMP, and its component Growth Management Plan and Regional Mobility Plan, when they address many significant land use and transportation issues in generalized terms. These plans call for local governments to "balance" housing and jobs within arbitrarily defined sub-regions, but the specific mechanisms to implement such schemes, or to enforce compliance in the future are left unaddressed.

Y-2

It is clear, however, that implementation of the Plan could impose significant costs upon many businesses in the region, and that these costs are likely to be passed on to the population as a whole. It is not clear that the resulting benefits in air quality would be outweighed by the costs.

Y-3

As an example, park and ride or car pooling incentives imposed upon Hollywood Park and the Forum might result in significant burdens on these businesses and their patrons. Attendance may suffer so much that the City would experience substantial reductions in general fund revenues. Would air quality benefits from these actions be greater than their costs?

Y-4

Without such issues being addressed with greater clarity and specificity, the AQMP cannot be adequately evaluated in terms of its physical, social and economic impacts upon local governments and communities. In addition, the EIR does not address how severely the region's economy and local economies could be adversely impacted if the goals and assumptions of the plan are not achieved.

Y-5

In summary, too much is assumed and too little is adequately addressed by the draft AQMP and its EIR to merit the adoption of either the EIR or any of the plans at this time.

Sincerely,

from locating in the Basin and could also induce relocation of economic activities to other areas. Further, failure to attain the Federal air quality standards may result in the imposition of federal sanctions to the Basin. These sanctions would remove federal funding for the urban infrastructure required to accommodate the future growth of the Basin. Inability to expand urban infrastructure would cause greater impacts on cities than implementation of the AQMP.

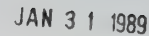
Y-5

Your comment is noted and will be forwarded to the District Board for consideration in its decision on the AQMP.

PDE:jb

OFFICE OF
PAUL D. ECKLES
CITY MANAGER

000746



401 BANK OF AMERICA TOWER THE CITY • ONE CITY BLVD WEST ORANGE CA 92668 • (714) 634-2900

January 30, 1989

Ms. Suzanne Reed
Special Projects Coordinator
South Coast Air Quality Management District
9151 Flair Drive
El Monte, California 91731

Dear Ms. Reed:

Relative to the forthcoming AQMD hearings, the enclosed copy of a letter which I sent to the Joint Committee on State's Economy on September 27 last correctly states our current position.

This letter pledges the support of our Chamber for the South Coast Air Quality Management District and the District Board in their effort to improve air quality in the basin, and in particular, that of Orange County, as well as the concerns of the Chamber in our efforts to effect the reduction of air pollution in the District.

If you have any questions, please call me.

Sincerely,

Lucien D. Truhill
President & CEO

LDT/bjc

Enclosure

**RESPONSES TO COMMENTS
ORANGE COUNTY CHAMBER OF COMMERCE (1/30/89)
COMMENT LETTER Z**

(Responses to comments begin on a following page)

BOOKS



ORANGE COUNTY CHAMBER OF COMMERCE

200 NORTH OF AMERICA TOWER, THE CITY OF ONE CITY, ELVO, WEST ORANGE, CA 92068 • (714) 634-1900

MEMBERS

1987-1988

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COMMITTEES

TO: Joint Committee on State's Economy

RE: Future Air Pollutant Reductions in the South Coast Basin

The Orange County Chamber of Commerce supports the South Coast Air Quality Management District and the District Board in their effort to improve air quality in the basin, and in particular, that of Orange County. The Chamber, however, wishes to express its concern over the direction these efforts have taken over the last year.

The Chamber is concerned with the additional ratcheting down of Source Specific Rules found in section XI of the District's rules and regulations. We believe additional tightening of these rules will effectively eliminate the ability of many of our small to medium businesses to remain in operation, while severely impacting the ability of larger firms to remain competitive in today's market place. For many, the solution to compliance with the new requirements will be to relocate in Mexico or out of state.

The resulting relocation of industry would negatively impact other important programs that affect the quality of life in Southern California. Increase in employment and reduction in the local tax base would effect our ability to deal with other crucial issues such as the homeless, medical care through county hospitals, education, and many other important social programs.

The Chamber believes that it is everyone's responsibility, not only industry, to effect the reduction of air pollution within the District. We are aware that all the "easy" reductions are already made and that further improvements will be difficult to achieve and expensive. The burden placed on industry by these new or amended rules is often out of proportion to the benefits realized. Consideration must continue to be given to the cost of implementation of these new requirements. We therefore urge the Board and the SCAQMD to work closely with the ARB, EPA and our elected officials at all levels to identify achievable, realistic air quality goals for the South Coast Basin.

It is also clear that, given our unique climate and topographic conditions the basin may never attain the federally mandated National Ambient Air Quality Standards. Future air quality improvements should be achieved by an integrated combination of reductions in pollutants through industrial source reductions where feasible and cost effective, reductions in vehicular emissions, regional planning, and effective mass transportation systems.

Z-1

Please refer to the response for comment G-157 for a discussion of socioeconomic impacts of the AQMP.

Z-2

Your comment is noted. The District recognizes that the economic impact of the Plan is a significant issue. The impacts of the AQMP have been assessed to the maximum extent possible in the Final EIR. The economic impacts will be further evaluated as each measure is considered for adoption during the rulemaking process. Our analysis to date does not indicate that there will be a significant relocation of businesses from the Basin as a result of the AQMP. The fact that the regional economy is booming suggests that, in general, businesses have been successfully making necessary adjustments in light of foreign competition and air quality regulations.

Orange County Board of Directors
June 1, 1988

In conclusion, there may never be a total solution to our air quality problems in Southern California. Future improvements in air quality must focus on an approach that includes contributions from all sectors of the community, as well as, a balance between air quality gains and the potential harm that could be done to other factors affecting the quality of life in Orange County and Southern California.



Steven A. Truitt, M.D.
President & CEO

For: Board of Directors
Orange County Chamber of Commerce

LDT:gc

000729
671000

RESPONSE TO COMMENTS
NATIONAL SPA AND POOL INSTITUTE (1/30/89)
COMMENT LETTER AA

January 30, 1989

South Coast Air Quality Mgmt. District
9150 Flair Drive
El Monte, CA 91731

Dear Sir:

The National Spa & Pool Institute is The National Trade Association that represents the pool and spa industry. It has just come to our attention from an industry representative in Southern California that the South Coast Air Quality Management District has proposed solar heating of swimming pools and spas in lieu of gas fired heaters, to reduce NOx emission levels in the Los Angeles basin.

The lack of quantifiable statistics regarding actual NOx emissions from natural gas consumption does not support the proposition when viewed in relation to the significant negative impact on area economics, health and recreation of the residents and the public interest in general.

NSPI has had considerable experience in the area of swimming pool and spa heating, including fossil fuel, and active and passive solar heating sources. We are also acutely aware of the unique medical and societal benefits regarding the usage of pool and spas. You need quantifiable data on actual heater usage to accurately measure NOx emissions. Actual Product Sales by themselves do not indicate levels of usage. We intend to furnish statistical data toward this end.

Appliance use estimates based on engineering data alone have specific and important disadvantages, i.e. they are based on theoretical considerations rather than observed consumer behavior, and cannot be adjusted in any systematic way for changes in household size, weather variations, lifestyle, income, etc.

An econometric method therefore appears to provide a more realistic means for estimating appliance-specific energy consumption. We will further explore this method.

AA-1 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. Emissions of NOx from residential and commercial water heaters were estimated to be approximately 13.3 tons/day in 1985. Currently, there are approximately 3.3 million natural gas-fired water heaters using fuel at an average rate of about 65 cubic feet per day per unit. With approximately one half million swimming pools in Southern California, many of these water heaters are applied to heating pools and hot tubs. A more detailed evaluation of the amount of NOx emissions produced by heating swimming pools will occur during the rule development process.

The control measure requirements have been modified. Other technologies capable of achieving equivalent emission reductions will be allowed.

As described in the Executive summary, the AQMP is similar to a General Plan. Thus, the depth of information and degree of detail in the evaluation is, of necessity, very general. The focus of the impact analysis is most often qualitative and reflects the level of information available at this tier of review.

AA-2 Your comment is noted and will be forwarded to the District Board for consideration. The socioeconomic impacts of the AQMP are presented in Appendix F. Please refer to response to comment AA-1.

AA-3 Please refer to the response to comment number AA-1. Public workshops are held during the rule development process, and at that time data received from industry are evaluated. The District would appreciate any detailed data regarding pool and spa heating that the National Spa & Pool Institute is able to provide.

AA-4 Your comment is noted. Please refer to the response for comment AA-3.

000720

South Coast Air Quality Mgmt. Dist.
January 30, 1989
Page 2

AA-5

The Board hearing is open to the public, and testimony is encouraged.
Your comment is noted and will be forwarded to the District Board.

AA-5 [We do respectfully request the opportunity to provide written and verbal testimony on or before your March 17th hearing on this issue. At that time we will be prepared to discuss and present testimony on the economic impact to the industry, consumer use profiles, and the benefits of pools and spas that would be denied if this proposal is adopted.

Sincerely,


Larry E. Paulick, P.E.
Senior Vice President

LEP/alc

000721

Water Heating
Products Association

RESPONSES TO COMMENTS
WATER HEATING PRODUCTS ASSOCIATION (2/1/89)
COMMENT LETTER BB

February 1, 1989

Ms. Suzanne Reed
Special Projects Coordinator
South Coast Air Quality
Management District
El Monte, CA 91731

Re: Comments of the Proposed Modifications to the
Draft 1988 Air Quality Management Plan
and Environmental Impact Report

Dear Ms. Reed:

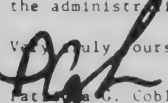
Enclosed are the Water Heating Products Association's
comments on the following:

- (1) Proposed Rule D-4, "NOx Control of Emissions
from Residential and Commercial Water Heating"
in the draft Air Quality Management Plan
("AQMP");
- 2) The Final Environmental Impact Report; and
- (3) The draft AQMP.

The Association is extremely concerned that the South
Coast Air Quality Management District ("SCAQMD") does not
understand the residential and commercial water heater business.
Rule D-4 is neither technically nor economically feasible. The
Association's comments are put forth in a spirit of cooperation
to explain the problem with this Rule.

Please insure that these comments are made part of
the administrative record on the Air Quality Management Plan.

Very truly yours,


Patricia G. Cobleigh
President

2957 Winding Lane
Westlake Village

Responses to comments will begin on a following page 1

000722

COMMENTS ON THE AIR QUALITY MANAGEMENT PLAN

Submitted by the
WATER HEATING PRODUCTS ASSOCIATION

February 1, 1989

I. INTRODUCTION

The Water Heating Products Association

("Association") is an association that promotes better and more efficient domestic water heating products for residential and commercial applications. The Association only recently learned that the South Coast Air Quality Management District (SCAQMD) had modified the September 1988 version of its proposed Air Quality Management Plan (AQMP) to include Rule D-4, "NOx Emission Reductions From Residential and Commercial Water Heating." This modified version of the AQMP was apparently released in late 1988.

The Association has worked hard this last month to evaluate this Rule and its role in the AQMP. The Association submits the following comments for the record. These comments include: (1) a summary of the Association's position on Rule D-4; (2) a detailed evaluation of this Rule; and (3) an evaluation of deficiencies in the final EIR and the AQMP.

II. EXECUTIVE SUMMARY AND RECOMMENDATIONS

An extension of time should be given for interested parties to comment on the recent modifications to the AQMP, specifically Rule D-4. Parties impacted by this Rule were

000723

given less than 30 days to review and comment on it in comparison to the several months a majority of interested parties had for review of rules in the original AQMP.

- Rule D-4, as proposed, would have a serious economic impact on the residential and commercial water heating industry in Southern California, with no benefit to air quality in the Basin. The economic impact of losing this industry to the State of California is substantial.

- SCAQMD's proposed Rule would adversely affect the quality of life of residents in the Los Angeles Basin.

- SCAQMD has proposed Rule D-4 with little data to support its need, cost, or cost-effectiveness and has failed to consider any alternative control technologies. In addition, the SCAQMD has failed to present: (1) the emission reductions to be achieved by Rule D-4 and (2) the secondary impacts associated with the use of solar technologies, including public health, economic, and land use (space) impacts. Without this information, the SCAQMD cannot draft an Environmental Impact Report on the AQMP that complies with the California Environmental Quality Act (CEQA) or associated guidelines.

- The Association requests that Rule D-4 be deleted from

the AQMP because solar residential and commercial water heating is neither technically nor economically feasible.

III. COMMENTS ON RULE D-1

1. Source Category: These two categories should be separated. Commercial water heating requires many more hours of use than residential water heating. In order to achieve BTU equivalency, particularly for a commercial setting, large areas of solar collectors are required. Commercial water heating requires more instantaneous types of operations than residential water heating.

2. Control Methods: The SCAQMD should not mandate the installation of a specific type of control technology. SCAQMD's approach is anti-competitive in that it suggests solar technology must be used. SCAQMD has failed to consider a variety of other control technologies available to reduce NOx.

3. Emissions: SCAQMD has failed to determine NOx emission reductions that this Rule would achieve. This is probably because of the many uncertainties with solar commercial water heating. Research installations would most likely not substantiate cost savings nor NOx emission reductions.

4. Other Impacts: The SCAQMD has failed to note that most sites of commercial water heaters do not have adequate space for solar collectors.

5. The SCAQMD underestimates the use of commercial water heaters. Most are used 8 to 16 hours per day, as compared to the SCAQMD's 1/2 to 1-1/2 hour estimate.

6. The payback is much longer without tax incentives to promote solarization.

7. The SCAQMD's proposed method of control is similar to the solar mandates in the Cities of Santa Barbara and San Diego which have been rescinded.

8. Placement of solar collectors is at the whim of the contractor, and may do little good if aligned incorrectly. In this situation, there is no possible payback.

9. Conventional gas-fired water heaters, used as a supplement to the solar component, will most likely provide most of the heating needed in a majority of installations, particularly commercial.

10. What is the basis for the SCAQMD's statement that 52% of the energy needed is being provided by solar energy?

11. What is the basis for the SCAQMD's estimate of 1.0 tons/day of NOx emissions from commercial water heating units for 1985?

12. Cost Effectiveness: The costs to install durable (long life, efficient) residential solar water heaters is closer to \$5,000, than \$2,000, as estimated by SCAQMD. Homes with one or two people will take longer to payback. The more people per residence the faster the payback. The cost of solar commercial water heaters run up to \$100,000. A gas

commercial water heater runs around \$3,000.

Section 40440 of the California Health & Safety Code requires that rules and regulations that the SCAQMD adopt be efficient and cost-effective. Clearly, the SCAQMD has failed to comply with this mandate with its proposed Rule D-4.

13. What is the basis for the SCAQMD's assumption that 50% of the solar panel costs can be recovered upon resale of a home?

14. How can the SCAQMD state the cost-effectiveness of this Rule when there are so many uncertainties regarding application of solar technology to commercial and residential water heaters?

IV. COMMENTS ON EIR

1. CEQA guidelines recommend that the lead agency consult early on with governmental agencies and interested parties regarding a particular rule or project. This "scoping" helps identify the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in an EIR and eliminate from detailed study unimportant issues. (CEQA Guidelines §15083). Public participation is an essential part of the CEQA process. It allows an agency to receive and evaluate public reactions to environmental issues related to the agency's activities. (Public Resources Code §§21083 and 21087; CEQA Guidelines §15201).

BB-1

Please refer to the responses for comments 1-1 and 1-2.

BB-1

The SCAQMD added Rule D-4 at the last minute, apparently under pressure from the solar industry. The SCAQMD failed to request any information from the impacted industry. Clearly the SCAQMD has not complied with the spirit or intent of CEQA in slipping Rule D-4 into the AQMP at the eleventh hour.

2. The Legislature adopted CEQA with the intent that all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the quality of the environment, will regulate such activities so that major consideration is given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian. (Public Resources Code §21000.)

Rule D-4 will seriously impact the quality of life of Southern Californians and will result in little, if any, air quality benefit. Southern Californians want hot water on

BB-2 [demand. The solar technology proposed in Rule D-4 is not a reliable nor technically feasible method of meeting this demand.

BB-3 [3. CEQA requires that the lead agency provide adequate time for other public agencies and members of the public to review and comment on a EIR that it has prepared. (Public Resource Code §21083 and 21087; CEQA Guidelines §15203).

BB-2 Solar technology is available and has been in use for years; it has been promoted by the California Energy Commission and other energy agencies. In addition, solar technology will continue to be examined during the development of specific rules which would implement AQMP control measures.

BB-3 Please refer to the response for comment 9-11

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BB-3
cont.

As discussed in Section IV.1 above, the SCAQMD failed to give adequate notice and opportunity to comment to the industry that will be severely impacted by Rule D-4. This industry has had less than 30 days to review the AQMP and the final EIR, whereas other industries have been given several months to comment on these documents and work with SCAQMD staff to change their contents.

BB-4

4. CEQA requires that cumulative impacts of a project or projects be discussed when they are significant. (Public Resources Code §§21083 and 21087; CEQA Guidelines §15130).

The AQMP is a collection of pollution control rules that will have major air quality, public health, and socio-economic impacts. In order to adequately evaluate the cumulative effects of these rules the SCAQMD must know the emissions reduction capability, costs and cost-effectiveness of each rule. The SCAQMD has provided little such information on Rule D-4. Therefore, the SCAQMD has failed to adequately address the cumulative impacts of the AQMP.

Furthermore, CEQA requires the agency to examine reasonable options for mitigating or avoiding any significant cumulative effects of a proposed project. The SCAQMD cannot comply with this mandate because it has not performed the first step, that is determining the cumulative impacts of all the rules in the AQMP.

5. CEQA requires that an EIR trace a chain of

BB-4

The December, 1988 EIR contains a discussion of cumulative impacts on pages 6-20 through 6-22. Please refer to the response for comment 1-1

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cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. (Public Resources Code §§21083 and 21087; CEQA Guidelines §15131).

BB-5

The SCAQMD has failed to address the socio-economic impacts of Rule D-4. As described above in Section III, application of solar technology is cost-prohibitive and land use (space) intensive. Furthermore, as discussed in Section IV.2, the life style of Southern Californians includes hot water on demand. Solar technology is an unreliable source to meet this demand.

6. CEQA requires the lead agency to use its best efforts to find out and disclose all that it reasonably can to forecast the impacts of a proposed rule or project. (Public Resources Code §§21083 and 21087; CEQA Guidelines §15144).

BB-6

The SCAQMD has made few efforts to determine the emissions reduction potential, the costs or the cost-effectiveness of Rule D-4. The SCAQMD has failed to use its best efforts to adequately forecast the impacts of this Rule.

7. CEQA requires that an EIR be prepared with a sufficient degree of analysis to provide the decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. (Public Resources Code §§21083 and 21087; CEQA Guidelines

BB-5

Socioeconomic impacts have been addressed in Appendix F of the EIR.

BB-6

As Plan control measures are developed into specific rules, additional detailed economic analysis will be done. A general level EIR for an overall plan does not need to contain the detail requested in the comment.

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8. A program EIR, such as the EIR on the AQMP, allows the lead agency to consider broad policy alternatives and program-wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts. The SCAQMD should use this opportunity to delete Rule D-4 from the proposed AQMP.

V. COMMENTS ON AQMP

- 9 -

"cost effectiveness is the main concern in promoting solar energy as a power source." The Association agrees with the SCAQMD comments regarding use of gas vs. use of solar.

2. Insufficient cost analysis has been prepared for the AQMP control measures. The SCAQMD should explore in more detail with industry (a) a combination of technologies and their ensuing costs to meet the desired requirements in each control measure, and (b) which industries are affected.

3. Given the technical complexity of the AQMP, the haste with which Rule D-4 was added and the overall plan prepared, and the major public policy implications of the suggested control measures, more time is needed to review and build consensus for the plan's provisions prior to adoption and transmittal of the 1988 AQMP to ARB and EPA.

The SCAQMD stated that it is in a hurry to adopt this plan so that EPA will incorporate it as part of the Federal Implementation Plan (FIP). The SCAQMD is concerned that EPA will promulgate a FIP in March or April of 1989. However, the court, in the suit (Coalition for Clean Air v. U.S. EPA, et al.) referred to in the AQMP, has not yet determined the schedule for FIP development. EPA has requested the court to allow it to notice a request for comments on how best to develop and implement a FIP. A minimum of 45 days would be needed to obtain public comments. In addition, the court has expressed an inclination to give EPA over a year to draft a FIP. The SCAQMD claims that

postponing adoption of the AQMP will prevent the SCAQMD's efforts from being considered as part of the FIP development. However, EPA's past practices in the FIP arena show that EPA has always relied on the local planning agency and its proposals and plans, whether draft or final.

4. Control measures, such as Rule D-4, for local government implementation require ordinance adoption. However, the controversial nature of the proposed control measures makes uncertain whether local government regulation will achieve significant results. Adoption of local ordinances by July, 1990 is unrealistic given the environmental review process required. Ordinance adoption is a lengthy process, requiring that cities schedule and notice hearings and other activities. Similar solar mandate ordinances that the SCAQMD proposes under Rule D-4 have been defeated in the Cities of Santa Barbara and San Diego.

5. Prior to adoption, the SCAQMD must strengthen the relationship between the proposed measures and the emission reductions. For example, no emission reductions are presented for Rule D-4.



December 15, 1988

Mr. Norton Younglove
Chairman, Governing Board
South Coast Air Quality
Management District
9150 Flair Drive
El Monte, California 91731

Re: Proposed 1988 Air Quality Management Plan

Dear Mr. Younglove:

CC-1

This letter presents Browning-Ferris Industries' (BFI) comments on the Draft 1988 Air Quality Management Plan ("AQMP" or "Plan") developed jointly by the South Coast Air Quality Management District ("District") and the Southern California Association of Governments (SCAG). Specifically, BFI opposes that portion of the AQMP which would require all biodegradable waste to be transported out of the District for disposal. Basically, the Plan envisions controlling landfill emissions from both public and private landfill facilities by transporting waste out of the District via a nonexistent rail system, to unknown destinations. This proposal is ill-conceived, likely illegal, and, if adopted, will create a more serious waste management crisis in Southern California.

CC-2

Out-of-basin transport of biodegradable solid waste is identified in the AQMP as a Tier I Control Measure. Therefore, the District believes this measure "can be adopted in the next five years."¹ According to the District, emissions generated from transport of the waste to landfills and decomposing waste would be reduced and contribute to efforts to attain national ambient air quality standards. However, for example, based on figures contained in the AQMP, reactive organic gas (ROG) emission reductions of 6.4 tons per day (tpd) can be achieved by banning biodegradable solid waste disposal in the District. This represents approximately one-half of one percent of the 1246 tpd of ROG contained in the current emissions inventory.

RESPONSES TO COMMENTS
WASTE SYSTEMS (12/15/88)
COMMENT LETTER CC

CC-1

Your comments are noted and will be forwarded to the District Board in making its decision on the AQMP. Please refer to the responses for consideration comments 2-9 and 2-13. That this measure will create a more serious waste management crisis is not so clear. Basin waste management agencies are presently considering locations out-of-Basin (Eagle Mountain and others). Through the effective use of rail transport and transfer stations a large scale program could be implemented that would contribute to the solid waste management problem, not worsen it. The ability of this measure to be implemented will be given thorough scrutiny when it is brought forward for implementation. Please refer to the responses for comments 2-20 and 2-30.

CC-2

Please refer to the responses for comments 1-12 and 1-15 if it is essential to implement all ROG control measures to ensure attainment of ambient air quality standards within limits of predictability.

¹ Draft 1988 Air Quality Management Plan, pp. 4-1, September 1988.

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CC-3

The District proposal ignores reality and glosses over numerous legal and technical issues and practical considerations which must be confronted prior to adopting this unrealistic control measure. These issues are discussed in more detail below.

The Proposed Control Measure Is Ill-Conceived

CC-4

Emissions from transport of waste out of the District are blithely "assumed to be zero through the use of electrified railines."² The District simply ignores issues surrounding the viability of this concept. The following issues are not analyzed, nor even discussed:

- o What is the cost of electrifying railines?
- o Who will pay that cost?
- o When will electrification occur?
- o Where will the electricity come from?
- o Can existing rail corridors bear this additional expected traffic?
- o Where will required loading facilities be located?
- o What new emissions will occur by closing regional landfills and increasing trucking distances?
- o Will these emission increases cancel out the reductions resulting from closing the landfills?
- o What is the benefit of reducing landfill emissions that are largely non-reactive methane?
- o Where and at what type of facility will the waste be separated into biodegradable and non-biodegradable portions?
- o Could such facilities be sited and/or permitted in the Basin?
- o Where will new disposal facilities be located?

Resolution of these questions will impact the magnitude of the air quality benefit, if indeed there is any, to be realized from shipping biodegradable waste out of the District.

The social utility of trash disposal cannot be disputed nor impeded without a viable workable alternative. Such alternatives are briefly mentioned in the conclusion to this

CC-3

These issues are not ignored. Please refer to the responses for comments 2-10, 2-20, 2-27, 2-30, 2-107 and 2-108.

CC-4

Please refer to the responses for comments 1-48 and 2-76. The issues raised in your comment are all valid and must be addressed when this measure is considered for implementation.

² Draft Air Quality Management Plan, 1988 Revision, Draft Appendix IV - A Tier I and Tier II Control Measures, pp. D-16, June 1988.

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Mr. Norton Younglove
December 15, 1988
Page 3

letter. We believe, too, that the District's proposed control measure is illegal.

The Proposed Control Measure Is Likely Illegal

CC-5 The District presumes the capability to develop and construct major new facilities (raillines and electrical generating facilities) which are outside the District's control. Contrary to the express requirements of the Clean Air Act, to our knowledge, there has been no significant contact with other local, state or federal governmental representatives which would evidence their interest or commitment to adopt the necessary requirements to allow the District's plan to proceed.³ If such contact had been made, one can only assume that the description of the proposed control measure would have contained a more realistic assessment of what would be required to achieve this modest reduction in emissions.

CC-6 Even assuming that all biodegradable waste can feasibly be transported out of the District and that this provides an air quality benefit to District residents, there is nothing in the plan to indicate that other communities are volunteering to receive the Basin's waste! It is unrealistic for the District to assume that other communities will accept waste generated in the Los Angeles area. In this era of environmental concern, communities are universally saying, "not in my back yard." What is true for nuclear waste and other municipal waste (e.g., east coast garbage barges) will be true for waste generated in the District.

CC-7 Since the AQMP does not evidence the existence of any community willing to accept our waste, and the plan does not even indicate whether other communities have been informed that Los Angeles wants to dispose of its biodegradable waste within their boundaries, adoption of this provision of the AQMP is contrary to federal law.

³ See, Clean Air Act Amendments of 1977, Section 172(b), 42 U.S.C. Section 7502(b) which require nonattainment plans to "evidence public, local government, state legislative involvement and consultation . . . of the plan provisions." Further, the Clean Air Act requires nonattainment plans to "include written evidence that the State, [and] the general purpose local government . . . have adopted by statute, regulation, ordinance, or other legally enforceable document the necessary requirements and schedules and timetables for compliance." 42 U.S.C. Section 7502(b)(10).

CC-5 Please refer to the response for comment CC-3 and its references. The siting difficulties raised in your comment are not legal but regulatory. By meeting all regulatory requirements, sites out-of-Basin can be developed just like sites in the Basin.

CC-6 Your comment is noted. Please refer to the responses for comments 2-107 and 2-108. The siting difficulties for several out-of-Basin facilities are recognized (see the responses for comments 2-9 and 2-13) but they effectively exist at all locations. Regardless of location, these difficulties must be addressed and overcome before a disposal site or any unwanted land use is sited..

CC-7 Please refer to the response for comment 1-48. The basis for concluding that delivery of wastes out-of-Basin violates federal law is unclear and inaccurate. A properly licensed and approved facility is not restricted from receiving acceptable wastes based on point of origin.

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The Plan Would Create A Serious Waste Management Crisis

CC-8

Approximately 50,000 tpd of waste are currently generated and disposed in Los Angeles City and County landfills. The best available projections estimate that without new landfills or major expansions at existing facilities there will be a 7,500 tpd shortfall of landfill space by 1991, a 15,000 tpd shortfall by 1993, and a 50,000 tpd shortfall by 1997. If local landfills are closed and our neighbors do not accept the waste, then we will have an immediate and serious health crisis from waste which is not being disposed of at all.

The Los Angeles Basin area should be a responsible neighbor and develop innovative solutions to handle our waste disposal problems. Making the cavalier assumption that we can send our problem to other counties is not constructive or astute public policy.

Conclusions

CC-9

The AQMP should be credited with highlighting an important and pressing environmental issue. The issue is that the capacity of our existing landfills is diminishing at an alarming pace. Since it is incredible to believe that others will accept our waste and since the air quality benefit from transporting biodegradable waste outside the District is insignificant at best, and could be totally offset by the emissions generated by the additional waste handling facilities required by the proposal, the proposal cannot be included in the AQMP.

CC-10

The better alternative is to initiate activities to reduce waste streams. This can include both waste minimization efforts and recycling of materials now being disposed of in landfills. The District should seek opportunities to work with landfill operators to develop landfill gas facilities as a renewable energy resource by coupling such facilities with industries which can use this clean energy to replace dirtier fossil fuels. Another viable alternative could be to permit waste-to-energy facilities in the District or near District boundaries to turn this waste into useful energy and thereby reduce the environmental consequences from mining, processing and burning fossil fuels.

These are the kind of innovations Southern California and the entire country need to effectively meet our environmental challenges and manage our resources into the next century.

CC-8

Please refer to the response for comment 1-45. No landfills would be closed until acceptable alternatives are identified. All solutions to this problem will have to be worked out in a responsible manner with a number of agencies before they can be considered for implementation.

CC-9

Please refer to the responses for comment CC-2, CC-4 and CC-6. For reasons outlined above, the District does believe this measure can be retained. If it cannot be implemented in a timely, effective manner because of the constraints outlined in your comments, then other contingency measures will have to be implemented in its stead.

CC-10

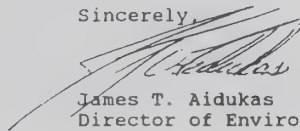
Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

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Mr. Norton Younglove
December 15, 1988
Page 5

BFI is here to help manage these problems and provides a very important service to our community. If we can assist the District to analyze these issues and jointly develop imaginative solutions, do not hesitate to call on us.

Sincerely,



James T. Aidukas
Director of Environmental Affairs

JTA:wbt

000038

Southern California Edison Company

P. O. BOX 800
2244 WALNUT GROVE AVENUE
ROSEMEAD, CALIFORNIA 91770

RESPONSES TO COMMENTS
SOUTHERN CALIFORNIA EDISON COMPANY (2/1/89)
COMMENT LETTER #DD

HAIDER N. MANSOUR
MANAGER OF
ENVIRONMENTAL REGULATION

February 1, 1989

TELEPHONE
(818) 302-8488

Mr. Brian Farris
South Coast Air Quality
Management District
9150 Flair Drive
El Monte, CA 91731

Dear Mr. Farris:

SUBJECT: Comments on Air Quality Management Plan
and Environmental Impact Report

The Southern California Edison Company supports the District's goal to prepare a sound air quality plan for meeting federal clean air mandates. However, we believe the District's plan should include the option of focusing on reducing hydrocarbons rather than on major reductions in both hydrocarbons and oxides of nitrogen.

DD-1

The District has evaluated both the SCE and WSPA alternatives and has concluded that neither alternative achieves all federal ambient air quality standards. Please refer to the response for comment 1-1, Attachments 1 and 2.

DD-1

By emphasizing a ROG-focused adoption approach, while reserving the plan's NOx measures and most of Tier III measures as contingency measures to address emission reduction shortfalls if they should occur, the District's final AQMP can meet the basin's air quality goals at the earliest practicable date and for the least cost.

DD-2

The AQMP is intended to meet both the federal and state ambient air quality standards. As described in Attachment 1, the AQMP is the only plan proposed which meets all federal ambient air quality standards. Furthermore, although the AQMP does not meet all the state ambient air quality standards within the twenty year time frame, it comes closer to doing so than the other alternatives proposed.

DD-2

Further, we believe the final AQMP should be consistent with California Clean Air Act (AB 2595). A plan which concentrates on ROG reductions and ranks measures according to their cost and air quality benefits most clearly will meet the intent and requirements of AB 2595.

In support of our recommendations, we are submitting the following detailed comments:

ROG-FOCUSED OZONE LEVELS IN THE YEAR 2000

DD-3

Since our December AQMP/EIR comment submittal, we have evaluated the effectiveness of the District's proposal and the ROG-focused alternative in the year 2000 by using the District's urban airshed model. We demonstrated that a ROG-focused approach will achieve a peak ozone level of 13.1 pphm by the year 2000; whereas, the District proposal only achieves 17.7 pphm during the same time frame.

DD-3

Please refer to the response for comment 1-1. Although the SCE proposal may achieve a slightly higher reduction in ozone levels at an earlier date, the proposal fails to meet all ambient air quality standards.

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Brian Farris
February 1, 1989
Page 2

These results strongly support our contention that the District proposal delays ozone attainment and will result in large sections of the basin being exposed to higher ozone levels than the ROG-focused alternative. For example, in parts of San Bernardino and Riverside Counties, peak ozone levels in the year 2000 will be 35 percent higher under the District proposal than the ROG-focused alternative.

AB - 2595

In order to comply with key provisions of AB 2595, the District must prepare and submit a plan for attaining and maintaining state air quality standards to the California Air Resources Board not later than December 31, 1990 (Section 40911.a). AB 2595 requires the plan to meet certain conditions. We believe state law requires that the final plan for the basin be consistent with key AB 2595 requirements.

First, the plan the District submits must include "[m]easures sufficient to reduce overall population exposure to ambient pollutant levels in excess of the standard by at least 25 percent by December 31, 1994, 40 percent by December 31, 1997, and 50 percent by December 31, 2000, based on average per capita exposure and the severity of the exceedences, so as to minimize health impacts..." [Section 40920-a.4]."

We believe this requires the District to use the ROG-focused strategy because it will minimize ozone health impacts as required by AB 2595 by reducing ozone levels by as much as 64 percent by the year 2000. In addition, the ROG-focused alternative will have far lower average per capita exposure rate than the District's proposal in the year 2000. By emphasizing ROG reductions, the District plan can be made consistent with state requirements.

Secondly, the District must include in the plan "...an assessment of the cost effectiveness of available and proposed control measures and shall [include in the plan] a list which ranks the control measures from the least cost-effective to the most cost-effective." Further, "[i]n developing an adoption and implementation schedule for a specific control measure, the district shall consider the relative cost effectiveness of the measure, as determined under subdivision (a)...[Section 40922, a and b]."

The District's current plan does not include this cost-effective ranking, nor does it evaluate measures by technological feasibility, total emission reduction potential, the rate of reduction, public acceptability and enforceability as required under this Section of AB 2595.

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Lastly, the intent of AB 2595 is to assure that a District plan shall endeavor to achieve and maintain state standards (ozone, carbon monoxide, sulfur dioxide and nitrogen dioxide) by the earliest practicable date [Section 40910]. District also must consider the cost-effectiveness of their air quality programs, rules, regulations and enforcement practices in order to achieve the most efficient methods of air pollution control. AB 2595 [Section 40913, Subsection F-b] requires that "Each district plan shall be based upon a determination by the District Board that the plan is cost-effective strategy to achieve attainment of the state standards by the earliest practicable date."

DD-4

Please refer to the response to comment DD-3. The District is required to meet both federal and state standards for PM10. Although the AQMP meets the federal standard, it fails to meet the state standards. Thus, the AQMP cannot be set to "over attain" for PM10. Please refer also to Attachment 2.

DD-5

Please refer to the response for comment DD-3, to Attachment A, and to Attachment B, section 6.

DD-4

DISTRICT PLAN OVER ATTAINS FOR PM-10

The District's proposed PM-10 plan over attains the federal PM-10. The District's policy of attaining federal PM-10 standards by a wide-margin is both costly and will delay ozone attainment. By using the ROG-focused alternative, the District can meet ozone attainment without over attaining for PM-10.

DD-5

PM-10 MODELING SHOULD USE AQMP 2010 OZONE LEVELS

The District's PM-10 dispersion modeling overstates particulate nitrate levels for the year 2010. Our modeling shows that reduction in ROG will lead to a reduction in ozone. In addition, we have found that reducing both ROG and ozone will reduce hydroxyl and nitrate radical levels. Hydroxyl and nitrate radicals are responsible for converting NO2 to nitric acid.

The District PM-10 modeling did not factor reduction to particulate nitrate that would result from control measures in the AQMP that would reduce hydroxyl and nitrate radicals. The District only addresses reduction in particulate, nitrate from NOx reductions. This omission over estimates the predicted particular nitrate occurring in 2010.

DD-6

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP. Please refer also to the response for comment DD-2.

DD-6

CONCLUSION:

Edison supports the goal of having an AQMP framework adopted in March of 1989. Edison believes the draft AQMP and EIR can be revised prior to March 1989 to reflect the changes required by AB 2595. We believe the changes we have recommended are required under applicable state law and will meet our shared air quality goals. We are available to work with the District to assure that a plan can be adopted in March.

000741

Brian Farris
February 1, 1989
Page 4

In support of our comments on ROG-focused emission control plan effectiveness in the year 2000, I have included a summary of our modeling results. In addition, I have enclosed as part of our formal comments on the AQMP and EIR: 1) a detailed critique of the AQMP Transportation, Land Use and Energy Conservation measures; and 2) complete copy of Edison's January 10, 1989 AQMP Alternative Workshop presentation.

Sincerely,



Enclosures

cc: Suzanne Reed, SCAQMD (5 copies w/attach.)

000742



COUNTY SANITATION DISTRICTS

OF ORANGE COUNTY, CALIFORNIA

P.O. BOX 8127, FOUNTAIN VALLEY, CALIFORNIA 92728-8127
10844 ELLIS, FOUNTAIN VALLEY, CALIFORNIA 92708-7018
(714) 962-2411

RESPONSES TO COMMENTS
ORANGE COUNTY SANITATION DISTRICT (2/1/89)
COMMENT LETTER EE

February, 1, 1989

Dr. James Lents, Executive Officer
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

SUBJECT: Draft Air Quality Management Plan
and Environmental Impact Report

Dear Dr. Lents:

Recently, the County Sanitation Districts of Orange County (Sanitation Districts) have expressed concern over certain control measures from the AQMP and relevant sections of the EIR. Since that time, staff from the SCAQMD, the Sanitation Districts and other POTW and landfill agencies have met and discussed the major concerns and have come to an informal understanding. The purpose of this letter is to convey our understanding of the meeting.

We believe that the AQMP/EIR needs to better address non-methanol clean fuels, choosing POTW fugitive ROG control strategies, and identifying criteria specifying ultimate solid waste disposal options. We further believe the changes should be made on their own merits. Our understanding is that changes will be made to some AQMP appendices and the appropriate sections to the EIR.

The changes to be made should include the below listed control measures (in the form discussed with Elaine Chang of your staff) in a format as recommended in our written testimony presented at the December 16, 1988 Public Hearing. The control measures of concern are:

| <u>Control Measure</u> | <u>Description</u> | <u>Recommended Changes</u> |
|------------------------|--------------------------------|--|
| C-2 | Emissions from I.C. engines | Allow consideration of digester/landfill gas use as clean fuel for I.C.E. electrical generators. |

(Responses to comments will begin on a following page.)

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| | | |
|-----|---|--|
| D-2 | Out of basin transport of biodegradable solid waste | Re-examine economics, siting, emissions from this measure vs alternative of "BACT" landfill, also recycling impacts. |
| D-3 | Control of fugitive emissions from POTW's | Do not specify specific control technology such as carbon canisters or scrubbers. Instead specify only a 33% reduction goal for fugitive ROG |
| E-3 | Control of emissions from livestock waste and use of digester gas | Proposed disposal of manure via sewage disposal options are not feasible. Pipeline quality use of digester gas may be in conflict with intent of state law for landfill gas. |
| F-1 | Best available retrofit control technology (BARCT) | Provide implementation flexibility |
| All | All other applicable control measures | Provide implementation flexibility |

EE-1

Your comment is noted. The December, 1988 EIR will be changed on page 4-18-15 by adding a last sentence to "MITIGATION" to read: *Water conservation is inadequate to totally mitigate the economic impacts of growth limits caused by sewer hookup moratoriums.*

In the EIR discussion of economic impacts on Sewage Treatment Plants, it is considered that if reductions of emissions under control measures D-3 and F-2 (sulfur content of gaseous fuels) do not meet the goals, expansion of wastewater treatment facilities may be restricted. The economic impact was stated to be growth limiting without new sewer hookups (FEIR, pg. 4-18-15). The listed mitigation measure, water conservation, though important for conserving water resources and coincidentally, an important element of our Districts wastewater management program, cannot be expected to provide additional capacity to the wastewater treatment facility sufficient to permit new hookups that will occur. Thus, the proposed mitigation measure, conservation, may not adequately remove any constraints on growth that sewage treatment plant expansion restrictions would cause. The Districts request that the final EIR recognize the inadequacy of water conservation as a means of totally mitigating the economic impacts from growth limits caused by sewer hookup moratoriums.

We would further point out that on the one hand, the AQMP implies severe restrictions on our ability to expand the sewage treatment facilities, yet in the appendix for the Tier I control measure "E-3", the plan proposes as one measure the discharge of solid waste from

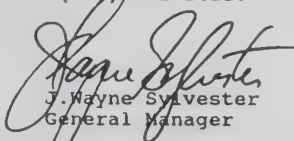
000747

dairy herds in the upper basin into the Sanitation Districts' sewage system. You need to know that this proposal would double the loadings on our treatment plants. The quantity of biochemical oxygen demand (BOD) from the 500,000 dairy cows in the upper basin is equivalent to the solids BOD loading from the entire existing population that the Sanitation Districts now serve in Orange County.

The Districts would also like to point out "the conflict of purposes" that sewer moratoriums have on minimizing traffic congestion. One of the stated objectives of the regional mobility plan is to minimize commuter trips by balancing the location of jobs and homes. This objective will be frustrated if new construction is prohibited by a sewer moratorium.

In closing, I would like to again reiterate that the Districts have always supported air pollution goals and other regulatory activities that lead to environmental management programs that protect all three media (water, land and air) and will continue to do so in the future. However, in the absence of known technologies, technology forcing control measures must have sufficient flexibility to allow for technology development while we are allowed to continue to provide wastewater management services essential to protecting public health and the environment. We believe our proposed language changes to the subject control measures will move toward this greater flexibility while, ultimately, strengthening the AQMP document.

Once again, we express our appreciation for your agency's attention to POTW's and landfill operator's concerns regarding the Air Quality Management Plan and Environmental Impact Report. If you should have any further questions, feel free to contact Blake Anderson, Director of Technical Services, or myself at (714) 962-2411.


J. Wayne Sylvester
General Manager

JWS:SS:au

REF#920016.LTR

cc: Barry Wallerstein, SCAQMD Director of Planning ✓

EE-2

The environmental and plan implementation conflicts caused by sewer moratoriums restricting the achievement of jobs/housing balance because of restrictions on new construction are noted. The CSDOC recommend that POTW-specific BACT be applied instead of moratoriums on sewage treatment plant expansions, due to the adverse impact BACT could place on attaining Orange County's jobs/housing balance targets. CSDOC also states that moratorium on sewage treatment plant expansions would hinder its ability to meet the mandates of the federal Clean Water Act and the California Ocean Plan. These recommendations and statements will be forwarded to the District Board for consideration.

000745



Alan F. Pegg
Area Manager

RESPONSES TO COMMENTS
RTD (1/18/89)
COMMENT LETTER FF

JAN 18 1989

Dr. James M. Lents
Executive Officer
South Coast Air Quality Management District
9150 South Flair Drive
El Monte, California 91731

Dear Dr. Lents:

The SCRTD has previously commented upon the Policy Proposals for the 1988 Air Quality Management Plan (AQMP), upon the Draft Air Quality Management Plan, and upon the SCAQMD's Proposed Rule 1601 - Fleet Conversion to Clean Fuels. We have now received and reviewed both the December Proposed Modifications to the Air Quality Management Plan and the Final Environmental Impact Report (FEIR) for the 1988 AQMP.

The preparation by the SCAQMD and SCAG of these plans and associated documents clearly represents an immense planning effort. The transit industry will be highly impacted by AQMP proposals, including both proposed new vehicle emissions controls, and proposed major expansion of transit services as an alternative to automobile use. We support the broadest possible review and discussion of the AQMP as a means of building awareness and support for implementation of the AQMP overall, as well as a means of evaluating and adjusting specific Plan proposals.

Our comments on the Final Environmental Impact Report (FEIR) and the Proposed Modifications to the AQMP are as follows:

- FF-1
1. Sections discussing the Regional Mobility Plan appear to be based on the October 1988 Draft Regional Mobility Plan. These sections should be updated to reflect significant changes made by SCAG during November and December. In particular, the scope and costs of the proposed transit guideway program have been reduced by over \$13 billion, reducing the projected shortfall for transit capital by almost 50%.
 2. We note and support the revision of the AQMP to substitute "very low emitting vehicles/engines" for "clean fuel vehicles". The revised wording allows manufacturers and fleet operators the flexibility to achieve emissions reductions using the most reliable and economical technology available, whether this is methanol, propane, compressed natural gas, or modified diesel fuel used with a particulate trap.
- FF-2

FF-1

The AQMP and cost estimates are being updated to reflect the SCAG changes. Your comment regarding reduced costs of the transit guideway program is noted.

FF-2

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

000746

FF-3

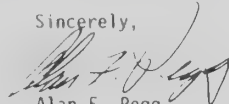
3. We appreciate the FEIR's explicit recognition of potential tradeoffs between investment needs to implement new transit vehicle emissions technologies, and funding needs for service expansion. The FEIR correctly points out that neither vehicle conversion nor service expansion will be feasible without additional federal, state, and local funding support. However, we are less optimistic than the FEIR that conversion to clean fuel vehicles will eventually lead to significant reductions in operating costs. Growing fare revenues associated with increasing levels of patronage are also unlikely to reduce the need for transit subsidies, because on most transit lines, any significant growth in patronage will require additional service capacity. The SCRTD supports the expansion of "third party" transit subsidies provided by employers, retailers, and municipalities as an alternative to relying solely upon traditional general taxation sources for transit operating subsidies.

FF-4

4. On page 6-20 of the FEIR, it is suggested that the visual impacts of transit electrification could be mitigated by underground wires. This proposal is certainly feasible, at some cost, for light rail transit and is in fact proposed for light rail operations in the Norwalk-El Segundo corridor. Subsurface trunk electrical lines may also be feasible and desirable for any system of electrified bus lines. Subsurface placement of the final power feeder lines for electric trolley buses will be complicated by the absence of a rigid rail guideway. Potential future availability of magnetic induction technology for this purpose is hypothetical at this point.

The SCRTD looks forward to further work with you in efforts to reduce transit vehicle emissions, while increasing the proportion of the region's travel served by transit.

Sincerely,



Alan F. Pegg

cc: Mark Pisano, SCAG

FF-3

Your comments are noted. The cost reductions envisioned by the EIR were related to maintenance and operations costs. The increase in service capacity to serve more patrons may offset such cost reductions.

FF-4

Your comments are noted. The District and RTD should work together when specific control measures for electrified transit are considered for rule-making and implementation, to ensure that visual impacts are mitigated. Magnetic induction technology is considered to be a major breakthrough technology.

000727



Automobile Club of Southern California

HEADQUARTERS 2801 SOUTH FIGUENIA STREET • LOS ANGELES CALIFORNIA 90007 3294
MAILING ADDRESS P.O. BOX 2890 TERMINAL ANNE • LOS ANGELES CALIFORNIA 90051 0890

DAVID D. GRAYSON
DIRECTOR
ENGINEERING & TECHNICAL SERVICES

January 5, 1989

Supervisor Norton Younglove, Chairman
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Dear Chairman Younglove:

This letter presents our principal comments about the Draft Air Quality Management Plan and Environmental Impact Report proposed for adoption by the South Coast Air Quality Management District.

GG-1

- Many of the Draft Plan's measures should be designated as tentative. Implementation of those strategies for which a specific estimate of the air quality benefit and economic impacts is not included must be deferred until supporting data are available for public review and comment. Without such specific estimates, we are unable to identify costs and benefits to our members and motorists generally.

GG-2

- Air quality benefits of telecommuting and transit mode shift measures are speculative. There is a paucity of data and experience to support these strategies. This is true also of the extreme levels proposed for ridesharing and work rescheduling. As we suggest in the enclosed letter to SCAG, greater priority should be directed to freeway management and development, where we do have data and experience. The 1984 Olympics, with free flowing freeways even in the face of historically high traffic volumes, provided clear evidence of the potential air quality benefit of freeway system management.

GG-3

- Further reductions in motor vehicle emissions are achievable. Greater emphasis in the plan must be placed on quality of vehicle design and manufacturing and stricter enforcement of current federal and state motor vehicle "in-use" emission standards.

Our comments will be helpful in your deliberations.

Sincerely,

David D. Grayson

RESPONSES TO COMMENTS AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA (1/5/89) COMMENT LETTER GG

GG-1

Please refer to the response for comment 2-12.

GG-2

Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

GG-3

The ARB is well aware of the problems in-use vehicles have in complying with the emission standards. Since 1987, the ARB has undertaken a program in which thirty engine families per year are compliance tested for violations and, where applicable, emission reduction remedies are sought. In addition, the ARB is proposing revisions to its on-board diagnostic regulations which should result in significant improvements to in-use vehicle performance. The ARB also recently adopted revised recall regulations designed to improve in-use vehicle programs. Finally, the ARB is working with the Department of Motor Vehicles to implement a pilot program which will require that vehicles subject to an emissions recall have proof of correction before being issued a registration renewal.

000748



Automobile Club of Southern California

HEADQUARTERS 2881 SOUTH FIGUEROA STREET • LOS ANGELES, CALIFORNIA 90007 3294
MAILING ADDRESS P.O. BOX 2890 TERMINAL ANNEX • LOS ANGELES, CALIFORNIA 90051 0890

DAVID B. GRAYSON
DIRECTOR
ENGINEERING & TECHNICAL SERVICES

November 16, 1988

Don Griffin, President
Southern California Association
of Governments
600 South Commonwealth, Suite 1000
Los Angeles, CA 90005

Dear Don:

This is in reply to your request for comments on SCAG's draft Regional Mobility Plan.

- First, the draft plan suggests an overall goal to maintain mobility at no worse than 1984 levels. Although during two weeks that year--during the Olympics--motorists enjoyed a high level of highway service, the remainder of the year was hardly a worthwhile target for mobility. Southern Californians deserve better.
- Second, while the four major elements--system management, demand management, growth management, and facilities development--provide a useful planning/policy framework; we do have specific comments that follow:

1. System Management. The freeway elements of system management must be given absolute top priority in the plan. The freeway system, carrying half of the region's travel, is the backbone of Los Angeles mobility. Benefits of freeway system management can be large, achieved quickly at a relatively low cost, and will be long lasting. The 800,000 hour delay reduction suggested in the draft plan significantly underestimates the potential of system management. The draft plan should be revised to provide for urgent completion of regional freeway ramp metering, HOV bypasses at each ramp, upgraded freeway operations centers, and expanded incident response--all within the next five years, rather than spread over a 20-year period as presently scheduled in the Action Element.

Demand Management. Ridesharing, work rescheduling, telecommunications, and other demand management strategies have been shown to work on a voluntary basis. Your plan, however, assumes the public will accept laws and regulations requiring them to change

657,000

basic aspects of their lives. We believe this is an overly optimistic basis for your projected results. Forecasts of reductions in peak travel of 10% due to work rescheduling, 20% due to telecommunications, and increases in transit use to 19% for work travel are therefore, in our view, unrealistic. We find no basis in your documents to justify these projections. If your projections are wrong, additional serious delay will be encountered before policy-makers address the more realistic elements of the plan in a meaningful way.

3. Growth Management. The jobs/housing balance element of growth management is an appropriate regional goal. Surveys have shown this phenomenon is already occurring. People change their home and work location frequently, and one reason is to improve their commute. The plan should focus on removing existing barriers (with revised zoning, homeowner tax rate transfers, etc.) and letting the marketplace work rather than creating a complex structure of untried regulations such as those proposed by the plan.
4. Facilities Development. The draft plan is grossly inadequate in its provisions to augment our region's freeway network. Freeways are the backbone of our transportation system because they best meet regional travel needs both for people and the delivery of goods and services. Our multi-centered urban lifestyle is made possible by the freeway network. Lack of freeway access restricts social, economic and lifestyle opportunities; raises the cost of doing business; and, ultimately, makes us less competitive. New freeway links are needed to close system gaps and to provide freeway access to inadequately-served communities and emerging new areas. Our studies have identified the need for seventeen specific new freeway projects in the region, nearly twice the miles of new freeways mapped in the draft plan.

The draft plan's proposed massive investment in rail transit is not a substitute for needed new freeways. Improved highways and improved transit service are complementary, not competitive.

Thank you for the opportunity to comment.

Very truly yours,


David D. Grayson *dk*

Air Transport Association **ata** OF AMERICA

1709 New York Avenue, N.W.
Washington, D.C. 20006-5206
Phone (202) 626-4147

F. H. H. R.
Executive Director
Engineering and Maintenance

RESPONSES TO COMMENTS
FEDERAL EXPRESS (11/9/89)
COMMENT LETTER HH

November 17, 1988

Dr. James M. Lents
Executive Officer
South Coast Air Quality
Management District
9150 Flair Drive
El Monte, California 91731

Mr. Mark Pisano
Executive Director
Southern California
Association of Governments
600 South Commonwealth Avenue
Los Angeles, California 90005

Subject: Comments on the Draft 1988 Air Quality Management Plan

Gentlemen:

Further to our comments filed October 15, 1988 on the Draft Air Quality Management Plan, we are forwarding for your consideration the attached comments from one of the ATA member airlines. These comments were received at ATA subsequent to our previous mailing.

Sincerely,

Clyde R. Kizer
Clyde R. Kizer
Vice President -
Engineering & Maintenance

Attachment
cc: J. G. Batey - FM

JDC:lbh

- HH-1 Trip reduction is being considered as one of the measures in the AQMP listed in Appendix IV-G. It is also addressed in the SCAG draft Regional Mobility Plan.
- HH-2 Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

000751



RESPONSES TO COMMENTS
FEDERAL EXPRESS (11/9/89)
COMMENT LETTER HH

November 9, 1988

Air Transport Association
Mr. J. D. Collier
1709 New York Avenue, NW
Washington, DC 20006

SUBJECT: California South Coast Draft Air Quality Management Plan

HH-1

While an interesting report and an ambitious objective, I find it interesting that the AQMP does not try to take advantage of some slightly less conventional ideas which could be implemented in Tier I. On-Road Mobile Emissions account for from 46% to 87% of pollutants and the number of vehicles trips is projected to rise by 72% from 1985 to 2010. It has to be assumed that a large part of these trips are to support the 47% increase in employment. Yet apparently no mention was given to any measures to reduce work related trips.

HH-2

One idea available today is to use PC's, FAX machines, and telephones to allow many professional and white collar workers to work some percentage of their time at home. Based on the charts of pollutants presented, the economies of scale would indicate minimal impact from airline related changes, in fact from most industry, compared to the potential impact of this action. It is also the type of action where all industry directly contributes because it is their employees who are staying home.

I recognize that this is a serious problem and all reasonable actions necessary to correct it should be undertaken. However, the major emphasis and effort should be in the major problem areas, and any sort of 'Deep Pockets' mentality where wealthy industries, such as the airline industry, are asked to absorb costs not in direct proportion to their contribution to the problem or to benefits received from such expenditures should be avoided.

HH-1

Trip reduction is being considered as one of the measures in the AQMP listed in Appendix IV-G. It is also addressed in the SCAG draft Regional Mobility Plan.

HH-2


Your comment is noted and will be forwarded to the District Board for consideration in making its decision on the AQMP.

000052

California South Coast Draft Air Quality Management Plan (cont'd)
November 9, 1988
Page 2

I notice that at the time of this writing we are already beyond the requested date for comments to be returned to AIA, and perhaps someone else has already forwarded these arguments. If not, however, I hope you will keep these thoughts in mind in any future discussions with the AQMP representatives.

Regards,



J. Gary Basey
Senior Engineer
A/C Project Engineering
COMAT: 5413 EXT: 222-5825

GB/ed

000754



CITY OF CYPRESS

5275 Orange Avenue, Cypress, California 90630

RESPONSES TO COMMENTS
CITY OF CYPRESS (1/31/89)
COMMENT LETTER II

January 31, 1989

Mr. Mark Pisano
Executive Director
Southern California Association of Governments
600 South Commonwealth Avenue, Suite 100
Los Angeles, CA 90005

James M. Lentz, PhD.
Executive Officer
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

SUBJECT: Comments Regarding SCAG's Regional Mobility Plan
(RMP), Growth Management Plan (GMP), and
SCAG/SCAQMD's Air Quality Management Plan (AQMP)

Dear Sirs:

The quality of the air in the Southern California basin is of great concern to City of Cypress and, as such, we commend the Southern California Association of Governments and the South Coast Air Quality Management District for their planning efforts to achieve cleaner air for the basin.

The City is providing the following comments under the limited review and comment period.

The underlying basis of concern regarding all the above plans is the use of SCAG's GMP-4-modified population projections for the basin. As the goal of the plans is to achieve state and federal air quality standards, the population projections should be consistent with those used at the state level. Further consideration should be made to incorporate the state population projections into the plans.

Creating a jobs/housing balance is conceptually desirable; however, utilizing regulatory means to enforce a jobs/housing balance seriously impacts local land use controls. Not only would this affect a City's right to govern, but the GMP fails to address many of the secondary issues of why people live and work where they do, such as: needs of working mothers, continued fringe development, extended families living in one home, and careers with mandatory use of separate vehicles.

Many of the strategies suggested in the GMP raise serious questions about the authority held by representatives of a

II-1

SCAG plans are based on the GMA4-Mod J/H alternative which forecasts 18.3 million people by the year 2010--about 1.2 million higher than the state Department of Finance (DOF) projection (17.1 million). Most of the differences between DOF and SCAG levels of growth are due to differences in methodology and assumptions, specifically, natural increase. The SCAG forecast assumes births, deaths, and migration rates by ethnicity. In order to achieve the DOF total, all the ethnic fertility rates had to be merged to the projected white rate in the year 2010; the survival rates were also lowered, and the in-migration to the region was reduced in order to maintain the same net migration levels.

II-2

Please refer to the response for comment 2-83.

II-1

II-2

Mayor and City Council
7141 229-6699
Building & Sales
229-6730
Business License
229-6712
City Clerk
229-6680
City Manager
229-6688
Code Enforcement
229-6727
Engineering
229-6741
Finance
229-6713
Maintenance
229-6760
Personnel
229-6681
Planning
229-6720
Police Information
229-6400
Public Works
229-6740
Purchasing
229-6719
Recreation & Parks
229-6780
Redevelopment
229-6720
Risk Management
229-6685

regional planning agency. These representatives, while not elected by the people, are empowered by the plans to dictate planning policy and the related legal rights of property owners and citizens.

II-3

The SCAG/SCAQMD Regional Strategic Plan designates local government agencies as enforcers of various air quality control measures without the benefit of their prior input into the development of the plans. Cities should be provided with an opportunity to be more involved with the development of the methods of achieving the goals of the plans and be given the flexibility to accomplish the control measures, based on individual community conditions. Cypress has made great strides in the areas of transportation demand management and transportation system management, yet the methods of accomplishing traffic reductions may vary from the stated control measures.

II-4

Local government agencies continue to experience constraints on their existing sources of revenues to maintain and service their communities. The incentive for cooperation between the District/SCAG and local government may be somewhat strained, based on the demand for local implementation of control measures. The plans suggest local implementation which creates a greater monetary burden on existing City revenues while, at the same time, the plans recommend the use of existing local revenues to subsidize facilities development throughout the basin.

II-5

There is hope that SCAG and the SCAQMD will see the need to promote cooperative participation among the various agencies designated to implement the proposed control measures and programs. Many regional issues have been successfully resolved through the utilization of Policy Advisory Committees and Technical Advisory Committees. We see the positive opportunities for applying such support groups in this plan. The basin is large and the task is monumental, but for the goals of the plans to be met, commitment from all agencies is essential.

If you have any questions regarding this response, please contact Robert F. Beardsley, Director of Public Works/City Engineer at (714) 229-6740 or Christine Eynon, Director of Planning at (714) 229-6720.

Sincerely,


Darrell Essex
City Manager

cc: Cypress City Council Members
Robert F. Beardsley
Christine Eynon

II-3

Please refer to the response for comment 2-10.

II-4

Please refer to the response for comment 9-2.

II-5

Thank you for your comment. The District agrees that for the goals of the Plan to be met, commitment from all agencies is essential.

000755



DORIS BRADSHAW
DIRECTOR
18044 SANTA RITA ST
TARZANA, CA. 91356
PHONE (818) 881-1211
January 23, 1989

Brian W. Farris
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Dear Mr. Farris:

Fans of the Basin has reviewed the draft Final Environmental Impact Report for the December 1988 revision to the Air Quality Management Plan (AQMP) and makes the following comments.

On page 1-2, under Tier I measures, the provision to "Maximize the effectiveness of existing measures..." should include enforcement of existing law. Immediate enforcement is needed to halt implementation of projects such as the Sepulveda Recreation Lake, Los Angeles County, that fail to coordinate formally with the Air Quality Management District as required by NEPA. Please see attached letter dated August 1, 1988.

On page 1-3, the first sentence under "Summary of Areas of Controversy" should read "...affecting individuals, businesses, industries and governmental agencies." The Army Corps of Engineers and other governmental agencies should also be affected by impacts of the AQMP.

Please include the attached letter in all published records of public comment.

Sincerely,

Doris L. Bradshaw

Doris L. Bradshaw
Fans of the Basin

RESPONSES TO COMMENTS
FANS OF THE BASIN (1/23/89)
COMMENT LETTER JJ

- JJ-1 Your comment is noted. The District has a commitment to increase enforcement effectiveness based on AQMP policies. However, unless a specific rule is violated and the District is notified, action cannot be taken. In the instance referred to in your comment, the District can either participate in the review process (which was not feasible at the late date) or it can intercede with an agency to ensure potential emissions are effectively controlled. The District will use all practical means to achieve coordination and minimize emissions from projects that may cause significant air quality impacts.
- JJ-2 Your comment is noted and the prepared language will be added to the Final EIR after the Board adopts an AQMP.
- JJ-3 Your comment is noted and the letter is included.

000756



South Coast
AIR QUALITY MANAGEMENT DISTRICT

9150 FLAIR DRIVE, EL MONTE, CA 91731 (818) 572-6200

August 1, 1988

Ms. Doris L Bradshaw
19044 Santa Rita St.
Tarzana, CA 91356

Dear Ms. Bradshaw:

Thank you for your letter of July 19, 1988, in which you shared some material on the Sepulveda Basin Recreation Lake project, and requested our comments on the air quality issues. Dr. Lents has asked me to look into the matter. I have reviewed the information you provided and discussed it with my staff. We have the following comments.

The Corps of Engineers was in error, we believe, in not seeking formal coordination with the District. This is especially true because of the non-attainment status of the South Coast Air Basin for federal air quality standards under the provisions of the federal Clean Air Act. The Corps, as a federal agency, must work with local air quality agencies to ensure that federal projects are consistent with the Act. In fact, the Corps did so when it prepared the 1981 EIR/S, excerpts of which you also provided. The District believes that this project could induce adverse air quality impacts, and should have been discussed with us.

Potential air pollutant emissions and air quality impacts should have been re-analyzed and presented to the District for comment. The reliance on the 1981 analysis, which itself relied in part on 1979 air quality data, was not warranted given the changes in air quality, emissions characteristics, and, perhaps, in the scope of the project itself. At the least, a supplemental EIR/S should have been prepared and subjected to the public review process. Air quality impacts could arise from construction activities and vehicle use induced by the new recreation facilities. These impacts are calculable, and the information should be presented. If the emissions exceed the District suggested significance thresholds, then they constitute significant adverse environmental impacts requiring mitigation.

000757

Ms. Bradshaw

-2-

August 1, 1988

The District has the information and techniques available for Corps use to estimate air quality impacts. Without this analysis, the conclusion of no significant impact is unsubstantiated, and perhaps in error. We are willing to work with the Corps on any further air impact analysis they undertake.

Again, thank you for your concern and for alerting us to the situation. If you have any further questions, please feel free to contact me, or Brian Farris at 818/572-2152.

Sincerely,



Carolyn L. Green
Deputy Executive Officer
Office of Planning/Analysis

CLG:BF:tr

cc: Environmental Protection Agency
Corps of Engineers

000758



600 South Commonwealth Avenue • Suite 1000 • Los Angeles • California • 90005 • 213/385-1000

January 13, 1989

Ms. Patricia Nemeth
Deputy Executive Director
Office of Planning and Analysis
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Dear Pat:

Thank you for the opportunity to comment on the draft Final Environmental Impact Report for the proposed Air Quality Management Plan again during the extended comment period. We have reviewed this document and were pleased to find that most of our previous comments and editing changes have been incorporated in the new version printed in December 1988. However, due to the various changes that have occurred since the date of our previous comments in other plans affecting the AQMP and in the regulatory requirements applicable to the proposed EIR, we submit the following additional comments and corrections.

We agree with you that there are many significant inconsistencies existing in the present December 1988 AQMP EIR. With the assistance of Viviane Doche-Boulos, we have concluded the following:

- KK-1 (1) The report is inconsistent in its geographic reference to basin and region.
- KK-2 (2) The report is also unclear in its reference to "trends," without specifying trend years (e.g., 1984-2010, 1988-2010), and specifying which forecast is under consideration (Baseline, GMA-4 Trend, GMA-4 MOD Trend).
- KK-3 (3) Some calculations are not explained adequately, "Jobs/Housing Adjustment" in Tables 4-10-1 and 4-11-1. Without further definition, SCAG is unable to verify these percentages.
- KK-4 (4) Percent figures are extremely difficult to interpret and reconstruct without the original equations.
- KK-5 In order to minimize these inconsistencies, SCAG has made the following assumptions: That all references to "trend" assume the use of GMA-4 MOD

RESPONSES TO COMMENTS
SCAG (1/13/89)
COMMENT LETTER KK

- KK-1 The term Basin, as used within the AQMP EIR, is defined by physical boundaries shown in Figure 2-1. The term region was used generally to refer to varying areas depending upon context. See page 2-1, paragraph 2-1 as an example.
- KK-2 The Final EIR will be compiled after an AQMP is adopted by the District Board. References to the term "trend" will be clarified in the text for each reference, including trend years and forecast.
- KK-3 The percentage in Table 4-10-1 represents the population shifted in each county based on the differences between SCAG 2010 projections. GMA-3 and GMA-4 Modified - Table 4-11-1 presents housing shift percentages for the same two 2010 projections. Please refer to the Growth Management Plan (GMA-4) and GMA-3 projections for specific numbers used in calculations.
- KK-4 Your comment is noted. Without specific references no additional response is possible.
- KK-5 Your comment is noted.

000159

Ms. Patricia Nemeth
Page 2
12-Jan-1989

KK-5
cont Trend; all disaggregations are made to the air basin and all trends are measured from 1984-2010.

KK-6 The GMP revisions are enclosed in a "marked up" copy of pages from Chapter 4 of the AQMP EIR. The Mobility Plan figures are under review and will be transmitted to the District early next week on Wednesday.

KK-7 The discussion of impacts and mitigations for the Transportation and Land Use Measures is incomplete. As an example, in Section 4-1, Air Quality Impacts of Transportation System and Land Use Measures described on pages 4-1-34 & 35, impacts of only two measures out of 20 are discussed.

KK-8 The correlation between the impacts and the mitigation is vague for most of the Mobile Source measures. It is difficult to identify what mitigation strategy addresses what impact. It is desirable to have a clear identification of beneficial as well as adverse environmental impacts and a one to one correspondence between adverse impacts and proposed mitigations.

KK-9 As an example, in Section 4-1, on pages 4-1-33 & 34, a good part of the discussion in the Impacts section talks about potential benefits of clean fuels use and adverse impacts from the increase of formaldehyde emissions associated with the methanol fuel program. The Mitigation section does not talk about how the adverse impacts will be mitigated. Instead, it talks about the District's investigation of additional impacts. As an additional example, the mitigation statement on radial tires is simply a repeat of what was said under impacts.

KK-10 Proposed mitigations often do not convey a sense of commitment. The language such as "Preliminary studies indicate that formaldehyde emissions from such a program can be mitigated below the permissible exposure levels" (page 4-1-34), is common throughout the document. See for example, the Mitigation section on page 4-4-18 for Oxygenated Fuels. This terminology is not consistent with CEQA. Likewise, most of the mitigations proposed for the Land Use (Section 4-7), Population (Section 4-10), Transportation (Section 4-12) that use words such as "can" and "could" should instead use "will" and "required." Without changes in this language, it will be difficult to monitor these mitigations under the new Cortese bill, AB 3180.

KK-11 Some of the mitigation measures proposed in the EIR closely resemble control measures in the AQMP. As an example, in Section 4-7, several Land Use impacts of Alternative Work Schedules and Locations, Mode Shift Strategies, Growth Management, Freeway Capacity Enhancements are identified. A common mitigation measure has been identified in each case, namely, local General Plan Amendment. However, the control measure on Growth Management (AQMP Appendix IV-G) proposes General Plan Amendment as one of the control methods. The distinction between the types of General Plan amendments required for mitigation should be made clear.

KK-6 Please refer to the response for comment KK-2. All final changes will be incorporated into the Final EIR certified by the District Board. Based on previous changes submitted by SCAG, the proposed revisions are refinements of various numbers and do not change the quantitative input conclusions in the AQMP EIR.

KK-7 Please refer to the responses for comments 2-5 and 2-12. For air quality impacts (as opposed to other environmental resources) it was not necessary to address all of the measures because it is the collective impact of all measures on air quality that is the basis for forecasting impacts.

The two measures are identified as examples, and the conclusion regarding impact (in this case beneficial) is based on the set reductions achieved by all measures.

KK-9 The potential impact of formaldehyde emissions (exposure to toxic air contaminants) from methanol use will be mitigated by CARB establishing an emission standard for formaldehyde from methanol use that will not cause exposure to unacceptable concentrations in the ambient air. The reference to additional study was made because this standard and the specific methodology to accomplish it are in the process of being formulated. Your comment regarding radial tires is noted. Use of radials is a control measure and does not provide additional mitigation unless extended to other vehicles.

KK-10 Please refer to the response for comment KK-8 and its references.

KK-11 This has been done as noted in the response for comment K-8.

000000

Ms. Patricia Nemeth
Page 3
12-Jan-1989

KK-12

Additionally, to ensure consistency in information presented in different Plan and EIR documents, we have identified some revisions that need to be made. These are attached as "marked up" copies of pages from the document.

KK-13

It is appropriate to note here that the addition of the concept of job housing ratios as performance goals does not create any discrepancy between the GMP and other plans including the AQMP. The numbers in the GMP by subregion (Tables VI-1,2 & 3 of the GMP) are to be used for infrastructure development. The ratios of added jobs to housing (Table VI-4 of GMP) will be used to assess progress toward achievement of the job/housing balance (also see Chapter VII of GMP (December 1988) for implementation details).

Thank you.

Sincerely,



ANNE BAKER
Director, Environmental Planning

AB:ilc

Attachments

✓ cc: Mr. Brian Farris
Office of Planning & Analysis, SCAQMD

KK-12 Please refer to the response for comment KK-6.

KK-13 Your comment is noted.

000761



'89 JAN 32 11

January 31, 1989

Mr. Norton Younglove, Chairman
South Coast Air Quality Management District
9150 Flair Drive
El Monte, CA 91731

Dear Mr. Younglove:

Thank you for extending the comment period on the Final Environmental Impact Report (FEIR) for the Air Quality Management Plan (AQMP) and for providing this additional opportunity to supply comments.

The City of Irvine is concerned that the FEIR does not adequately address the comments in our letter of October 19, 1988 on the Draft Environmental Impact Report (DEIR). We believe that these issues should be addressed by the FEIR before its certification.

The City of Irvine is concerned that the FEIR does not sufficiently present alternatives to the AQMP. Several organizations have proposed alternatives to the District's plan. We suggest that each alternative be carefully analyzed and presented in the FEIR prior to its certification and the adoption of any final plan.

Thank you, again, for this opportunity to provide comments and for your cooperation. If you have any questions, please contact Sammy Rake in Intergovernmental Services at (714) 660-3697.

Sincerely,

William Woollett, Jr.
WILLIAM WOOLLETT, JR.
City Manager

WW/SR:camwp/younglove.sr

cc: Henry W. Wedaa, Cities Representative to SCAQMD,
County of Orange
James M. Lents, Executive Office SCAQMD
Don Griffin, President SCAG Executive Committee
Mark Pisano, SCAG Executive Officer

RESPONSES TO COMMENTS
CITY OF IRVINE (1/31/89)
COMMENT LETTER LL

LL-1 Please refer to the responses for comments 24-1 through 24-16.

LL-2 Please refer to Attachment 1 which discusses the alternatives to the AQMP, and Attachment 2 which addresses the ROG/NOx issue specifically.

000762



California Spa and Pool Industry
Energy, Codes and Legislative Council

RESPONSES TO COMMENTS
CALIFORNIA SPA AND POOL INDUSTRY (1/31/89)
COMMENT LETTER MM

January 31, 1989

Governing Board
South Coast Air Quality Management District
9150 Flair Drive
El Monte, California 91731

ATTN: Suzanne Reed, Special Projects Coordinator

RE: Air Quality Management Plan FEIR Comments

As provided for in the December 22, "Notice of Continuance", the California Spa and Pool Industry Energy, Codes and Legislative Council (SPEC) wishes to provide written comments on the Final Environmental Impact Report (FEIR) for the "Draft 1988 Air Quality Management Plan". This organization is the governmental relations trade association for California's billion dollar a year pool and spa industry. Its membership includes the principal companies in this diverse industry, including pool and spa contractors and subcontractors, manufacturers of pool and spa equipment, manufacturers and installers of both active and passive solar systems, retailers, distributors, service firms and chemical producers.

ENVIRONMENTAL IMPACT REPORT-

Our initial comments shall be directed to the FEIR section on pages 4-18-38 and 4-18-39 titled "ENERGY CONSERVATION MEASURES". This section addresses the draft plan's recent inclusion of mandating active solar heating systems for all new swimming pools, spas and hot tubs, residential and commercial.

The FEIR states, "Total lifecycle costs when considering avoided energy costs, result in an overall net savings for the system." This is simply not a true statement. While swimming pool active solar heating systems, in some situations, were cost effective when solar tax credits were available, today this is clearly not the case.

The County of San Diego and the City of Sacramento, nine and ten years ago respectively, adopted ordinances which required active solar pool heaters where gas heaters were to be installed. At that time the California Public Services Code required such ordinances to be cost effective. In 1985 the California Legislature passed,

MM-1

Your comment is noted. Additional data on the cost impacts and economic feasibility of flat plate solar collectors will be gathered and evaluated, during the rule development process.

000763

and the Governor signed, Public Services Code Section 25402.1(g)(2). This provision requires cities and counties with such energy conservation ordinances to update and file new bases for their determinations that the applicable energy requirements are cost effective when (1) there has been a substantial change in the factual circumstances affecting the determination of cost effectiveness, and (2) a formal request is made for such a review by an interested party. SPEC made such a formal request in both local jurisdictions. New cost effectiveness studies were made, hearings and workshops held and it was conclusively shown that solar was not uniformly cost effective. As required by law, the respective jurisdictions then voted to repeal their swimming pool solar heating mandates.

The principal changes affecting cost effectiveness of solar pool heating systems were:

1. All Federal and State energy tax credits (55% in 1980) for swimming pool solar water heating and pool covers had expired.
2. The price increase projections for natural gas used in 1980 were greater than actually experienced.
3. Solar water heating equipment costs had increased significantly.
4. High gas pricing levels, improved pool heater efficiencies and changing consumer attitudes contributed to a substantial reduction in the amount of natural gas consumed during the average pool heating season.

Attached as ATTACHMENT A is the San Diego swimming pool solar heating ordinance cost effectiveness analysis prepared by Sierra Energy and Risk Assessment, Inc. This analysis provided the basis for repeal of the San Diego County solar mandate ordinance. A similar study provided Sacramento with the basis for repealing its solar ordinance. The Sacramento City Department of Planning and Development's recommendation to the City Council is attached as ATTACHMENT B.

Under "MITIGATION", the FEIR suggests that the State Public Utilities Commission require gas utilities to expand cash rebate programs to ease the burden of meeting the proposed mandatory increase in swimming pool purchases ranging from \$5,000 to \$12,000. It is extremely doubtful that the PUC can be expected to impose the costs of such a large rebate program to benefit swimming pool buyers, both residential and commercial, on a utility's other ratepayers.

MM-2

Detailed discussion of mitigating adverse impacts will be addressed and assessed when full knowledge regarding the economic and environmental impacts of this control measure become available during rule development.

000764

MM-3

The **"MITIGATION"** section also suggests that ". . .energy efficiency should be considered by lending institutions in credit decisions, allowing applicants to qualify for larger loans based on reduced energy costs." Inasmuch as it is well established that swimming pool solar systems are not cost effective, mandating active solar heating systems, quite obviously, will not reduce energy costs. To follow this suggestion would constitute social activism, not banking.

DRAFT AIR QUALITY MANAGEMENT PLAN MODIFICATIONS

Before discussing our suggestions for workable - and reasonable - alternatives to the draft plan for reducing natural gas usage by swimming pools and spas, we must address the proposed December 1988 modifications themselves (spas and hot tubs which are not part of a swimming pool system generally use electrical energy for heating and thus, contrary to the December 1988 modifications' assumptions, cannot logically be considered in this discussion).

MM-3a

The NOx emissions which can accurately be attributed to swimming pool heaters, by the "modifications" author's own admission, are unknown. In the **"BACKGROUND"** paragraph, however, swimming pool gas heaters are included with the 3.3 million natural gas fired water heaters presently estimated to be in the District. This assumption reveals a total lack of competent inquiry. As with much of the reasoning in the **"PROPOSED MODIFICATIONS"** document, the basic assumption is badly flawed. Pool heaters are quite different from domestic hot water heaters. The manner in which they are used is discretionary to the homeowner. Potable hot water is a daily requirement and, thus, the simplistic formula of dividing number of heaters into total volume of natural gas usage is somewhat statistically useful, but only if applied to potable hot water. However, as noted in the discussion of solar cost effectiveness above, pool owners use their pool heaters infrequently because of gas costs. Pools are not heated year around, hence the "65 cubic feet per day per unit" figure is pure imagination.

However, there are some data available. Ten years ago, in 1979, a study by the Gas Company of Southern California determined that average gas consumption of pool heaters was 100 to 200 therms-per-year, and rapidly declining as a result of utility rate increases. Over the past decade, pool heater use has decreased to the point today when they are used briefly at the beginning of a swimming season (May) and at the very end of the season (September). In between, the pool heater is generally used only to heat spas. And since spas are typically used at night, solar cannot be used effectively. It is our belief that research will show that residential swimming pools today consume between 20 and 30 therms of natural gas per year (see **"RECOMMENDATIONS"** section, page 7).

MM-3

Your comment is noted. Please refer to the response for comment MM-2.

MM-3A

The control measure requirements have been modified. Other technologies capable of achieving equivalent emissions reductions will be allowed.

000765

MM-3a
cont However, even ten years ago, at the time SoCal was showing a 100 to 200 therms-per-year consumption, it can be assumed that the typical pool heater was emitting 160 ppm of NOx. Such an emission rate would produce 20 to 40 pounds of NOx per year. It is our understanding that the SCAQMD guidelines call for a ceiling cost for the reduction of NOx. This maximum allowable reduction cost is set at \$24,500 per ton, we understand. Valuing NOx at \$24,500 per ton, the 20 to 40 pounds-per-year of NOx, referred to above, would be valued at \$245 to \$490 per year. If one assumes that an active solar heating system could eliminate the entire 100 therms produced by a gas fired pool heater (not technically possible), the solar requirement proposed in the plan would result in an equivalent cost to homeowners of \$600,000 to eliminate one ton of NOx. Obviously this is considerably above the District's ceiling. Since a mandated solar system for pool and spa heating would displace only a small portion of the gas presently used, and since present actual gas used by pools is today estimated at between 20 and 40 therms-per-year, the SCAQMD solar mandate proposal would require homeowners to spend literally millions of dollars to eliminate a single ton of NOx. Clearly, this is unreasonable and far beyond your established cost-benefit guideline.

"Harvey Eder" is cited in the draft modification as the expert source for this statement, found under "COST EFFECTIVENESS":
"With the fuel savings, this cost (of a solar system costing \$5,000 to \$12,000) may be paid back in approximately 3-5 years."
This is totally unsupported by any studies or evidence to be found anywhere. Mr. Eder, we submit, may be an enthusiast (or budding entrepreneur) for solar systems, but we question his qualifications as an expert advisor to the District.

Finally, under the heading "OTHER IMPACTS", it is suggested that solar swimming pool heating systems may also be used for other hot water purposes. Domestic hot water supplies cannot be achieved through a swimming pool solar system without the addition of extremely expensive heat exchangers and additional controls. This arrangement would make the costs of a solar pool/domestic water system totally prohibitive for the vast majority of homeowners.

CONCLUSION: There are no viable mitigation measures contained in the FEIR to offset any of the extraordinary negative impacts of the proposal.

ECONOMIC IMPACT

MM-4
Adoption of a solar pool heating mandate by the SCAQMD would have a catastrophic effect on the spa and pool industry in its four-county region. Building permits issued in the four-county SCAQMD area indicate that between 5,500 and 6,000 swimming pools are

MM-4

Your comment is noted. Please refer to response to comment MM-1.

000766

ATTACHMENT 1

ALTERNATIVES TO THE PROPOSED PROJECT

Alternatives to the Proposed Project

ALTERNATIVES TO THE PROPOSED PROJECT

INTRODUCTION

District CEQA Implementation Guidelines Section 9.6(d) describes what is necessary to be considered in the required discussion of alternatives to the proposed project. The proposed project is the 1988 Revision to the Air Quality Management Plan. The alternatives discussion must "describe all reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project, and evaluate the comparative merits of the alternatives." Further, the Guidelines state that "The range of alternatives required in an EIR is governed by the 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The key issue is whether the selection and discussion foster informed decision-making and informed public participation." The specific alternative of "no project" must also be evaluated.

In accordance with these guidelines, nine alternatives to the proposed AQMP have been identified. The following is an expanded discussion of the alternatives presented in the December 1988 EIR. The alternatives have been reorganized for purposes of this discussion to clarify the issues. Comparisons of environmental impacts among alternatives includes considerations based upon mitigation measures being implemented in all alternatives.

The first alternative discussed was proposed by the Southern California Edison Company (SCE). SCE is a privately owned electric utility which owns and operates major power plants in the Basin and elsewhere in California and the southwest. Many of the proposed emission controls will require SCE to expend additional funds to further control emissions and to expand electricity production to facilitate further electrification of many Basin activities.

The second alternative discussed was proposed by the Western States Petroleum Association (WSPA, formerly the Western Oil and Gas Association, WOGA). This group is composed of petroleum refining and marketing companies. Many of the proposed AQMP emission control measures will require the petroleum industry to expend additional funds to further control emissions.

The general approach of both SCE and WSPA is to place emissions control emphasis on sources of ROG emissions, and reduce NOx emission controls relative to the AQMP. It is their contention that the ozone air quality standard could be reached more easily and sooner by this strategy, which would take advantage of the effect of NOx scavenging of ozone. These issues are discussed in detail in responses to specific comments in this Addendum.

The nine alternatives identified for discussion are:

1. ROG Primarily Alternative A (SCE);
2. ROG Primarily Alternative B (WSPA);
3. Implement Tiers I and II Only;
4. Implementation of Least Cost Measures Only;
5. Delayed Compliance;
6. Alternative Growth Scenario;
7. Alternative Mobility Strategy;
8. Additional Control Effort;
9. No Project.

Each of the nine alternatives are discussed in the following sections, and their potential impacts are summarized on Table 8.

ALTERNATIVE 1 - ROG PRIMARILY ALTERNATIVE A (SCE)

Introduction

The SCE alternative was originally proposed by the Southern California Edison Company as the "Cost-Effective/Early Attainment Alternative" in its comments on the DEIR, and later developed in the company's comments on the December 1988 EIR, and additional comments were submitted in a subsequent public workshop.

Description of the Alternative

This alternative incorporates a large portion of the emission control measures proposed for the AQMP. The differences from the proposed plan are:

- a. This alternative deletes from Tier I of the AQMP 8 ROG measures, 2 ROG/NO_x measures, 15 NO_x, and 27 measures for controlling SO_x, PM, NH₃, and combinations of all air pollutants, totalling 52 fewer measures than proposed in the Plan. All AQMP measures are identified on Table 1 and specific measures incorporated and deleted by SCE are also shown.
- b. The alternative includes 8 ROG only measures from Tier II of the plan. Two AQMP measures are not included.
- c. None of the proposed Tier III measures are included in this alternative.

TABLE 1
COMPARISON OF AQMP AND SCE
CONTROL MEASURES

| ITEM # | 1988 AQMP CONTROL MEASURES | SCE PLAN |
|--------|--|----------|
| 1 | A-1) WOOD FLATSTOCK, [ROG] | YES |
| 2 | * A-2) WOOD FURNITURE, [ROG] | YES |
| 3 | A-3) CAN & COIL, [ROG] | YES |
| 4 | A-4) AEROSPACE, [ROG] | YES |
| 5 | A-5) AUTO ASSEMBLY, [ROG] | YES |
| 6 | * A-6) AUTO REFINISHING, [ROG] | YES |
| 7 | * A-7) MARINE VESSELS, [ROG] | YES |
| 8 | A-8a) ARCHITECTURE COATING, [ROG] | YES |
| 9 | A-8b) ARCH COAT EMISS CHARGE, [ROG] | NO |
| 10 | A-9) PAPER, FABRIC, FILM, [ROG] | YES |
| 11 | A-10) GRAPHIC ARTS, [ROG] | NO |
| 12 | A-11) CLEAN-UP SOLVENTS, [ROG] | YES |
| 13 | A-12) METAL CLEAN & DEG, [ROG] | YES |
| 14 | A-13) DISC MFG, [ROG] | YES |
| 15 | A-14) BLOWING FOAM, [ROG] | YES |
| 16 | * A-15) SEMICONDUCTOR MFG, [ROG] | YES |
| 17 | A-16) PERC DRY CLEANING, [ROG] | YES |
| 18 | A-17) PETRO DRY CLEANING, [ROG] | YES |
| 19 | A-18) UNDERARM PRODUCTS, [ROG] | YES |
| 20 | A-19) DOMESTIC PRODUCTS, [ROG] | YES |
| 21 | A-20) SOLVENT WASTES, [ROG] | NO |
| 22 | A-21) ADHESIVES, [ROG] | YES |
| 23 | B-1) GAS TRANS: PHASE I, [ROG] | NO |
| 24 | B-2) GAS. TRANS: PHASE-2, [ROG] | YES |
| 25 | B-3) OPEN SUMPS, PITS, ..., [ROG] | YES |
| 26 | B-4) PLEASURE BOAT FUEL, [ROG] | YES |
| 27 | B-5) CYCLIC STEAM PROD., [ROG] | NO |
| 28 | B-6) PIPELINE HEATERS, [NOx] | NO |
| 29 | B-7) REFINERY FCC, [SOx] | YES |
| 30 | B-8) PET. COKE CALCINIG, [SOx] | YES |
| 31 | B-9) REFINERY PROCESS HEATERS, [PM] | YES |
| 32 | B-10) REFINERY FCC, [PM] | YES |
| 33 | B-11) OCS EXPLORATN., [ALL] | NO |
| 34 | B-12) PETRO REFINRY FLARE, [ALL] | NO |
| 35 | B-13) VALVES, PUMPS & COMPRESSORS, [ROG] | YES |
| 36 | B-14) OIL FIELD STEAM GEN, [NOx] | NO |
| 37 | * B-15) REFINRY HEATR/BOILER, [NOx] | NO |
| 38 | C-1) COMMERCIAL BAKERIES, [ROG] | YES |
| 39 | C-2) I.C. ENGINES, [ROG, NOx] | NO |
| 40 | C-3) CHARBROILING, [ROG] | YES |
| 41 | C-4) RUBBER PROD MFG, [ROG] | YES |
| 42 | C-5) AFTERBURNERS, [NOx] | NO |
| 43 | C-6) WOODWORKING OPERATIONS, [PM] | YES |

COMPARISON OF AQMP AND SCE
CONTROL MEASURES

| ITEM # | 1988 AQMP CONTROL MEASURES | SCE PLAN |
|--------|---|-------------|
| 44 | C-7) SMALL BOILERS, [NOx] | NO |
| 45 | * C-8) INDUSTRIAL BOILERS, [NOx] | NO |
| 46 | C-9) STATIONARY GAS TURBINES, [NOx] | NO |
| 47 | C-10) UTILITY BOILERS, [NOx] | NO |
| 48 | D-1) STARTER FLUID, [ROG] | YES |
| 49 | D-2) OUT-OF-BASIN WASTE DISPOSAL, [ALL] | NO |
| 50 | D-3) POTW, [ROG] | YES |
| 51 | D-4) SWIMMING POOL WATER HEATING, [NOx] | NO |
| 52 | D-5) RES. & COMM. WATER HEATING, [NOx] | NO |
| 53 | E-1) PESTICIDE APPLICATION, [ROG] | YES |
| 54 | E-2) LIVESTOCK WASTE, [ROG] | NO |
| 55 | E-3) AGRICULTURAL DUST, [PM] | YES |
| 56 | F-1) INSTALLATION OF BARCT, [ALL] | YES |
| 57 | F-2) STDS ON GASEOUS FUELS, [SOx] | YES |
| 58 | F-3) LIMITS ON LIQUID FUELS, [SOx] | YES |
| 59 | F-4) CONSTRUCT ROADS/BUILDINGS, [PM] | YES |
| 60 | F-5) AMMONIA EMISSIONS | NO |
| 61 | * F-6) EXEMPT EQUIPMENT | NO |
| 62 | * F-7) SOIL DECONTAMINATION, [ROG] | NO |
| 63 | F-8) NEW SOURCE REVIEW | YES |
| 64 | F-9) LOW EMM. BUILDING CONST, [PM, ROG] | NO |
| 65 | F-10) OIL PHASE OUT, [NOx] | NO |
| 66 | F-11) EMM. MIN. MNGT. PLAN. | NO |
| 67 | IMPROVED I/M FOR AUTO, LDT, MDT, [ROG, NOX, CO] | YES# |
| 68 | ADD HD GAS VEH TO I/M, [ROG, NOX, CO] | YES |
| 69 | HD VEH SMOKE ENFORCEMENT [ROG, NOX, PM] | NO |
| 70 | LOWER GAS VAP PRESS, [ROG] | YES |
| 71 | LOW ROG, CO STD FOR GLDV'S, [ROG, CO] | YES |
| 72 | LOW ROG, NOX, CO MD & LHD TRKS, [ROG, NOX, CO] | NO |
| 73 | LOWER NOX STD FOR GAS LDV'S, [NOX] | NO |
| 74 | LOW NOX STD FOR HD DIESEL TRKS, [NOX] | NO |
| 75 | LOW PM STD FOR MD & LHD DIESEL TRKS, [PM] | YES |
| 76 | * NEW DIESEL FUEL QUAL STD, [ROG, PM] | YES |
| 77 | METHANOL FUELED BUSES, [NOX, SOX, PM] | NO |
| 78 | RETROFIT PARTICLE TRAPS HD DIESEL BUSES, [PM] | YES |
| 79 | EVAP CONTROL/LARG CAN GAS VEH, [ROG] | NO |
| 80 | G-1) URB BUS SYS ELECTRIF, [ALL] | NO |
| 81 | G-2) CLN FUEL RETRO TRAN BUS, [NOX, SOX, PM] | NO |
| 82 | G-3) RADIAL TIRES ON LD MOTOR VEH, [PM] | YES |
| 83 | G-4) CLN FUEL NEW FLT VEH, [ALL] | NO |
| 84 | G-5) SMOKE VEH ENFORCE PRGM, [ROG, NOX, PM] | NO |
| 85 | H-1) BAN NEW DRIVE THRU FAC, [ROG, NOX, CO] | NO |
| 86 | 1.A) ALT WRK WEEK/FLEXTIME, [ROG, NOX, CO] | YES |
| 87 | 1.B) TELECOMMUNICATIONS, [ROG, NOX, CO] | YES |
| 88 | 2.A) EMP RIDESH/TRANS INCEN, [ROG, NOX, CO] | YES |
| 89 | 2.B) PARKING MGMT, [ROG, NOX, CO] | YES |
| 90 | 2.C) VANPOOL PURCH INCEN, [ROG, NOX, CO] | YES |

COMPARISON OF AQMP AND SCE
CONTROL MEASURES

| ITEM # | 1988 AQMP CONTROL MEASURES | SCE PLAN |
|--------|---|-------------|
| 91 | 2.D) MERCH TRANSP INCEN, [ROG, NOX, CO] | YES |
| 92 | 2.E) AUTO USE RESTRICTIONS, [ROG, NOX, CO] | NO |
| 93 | 2.F) HOV FACILITIES, [ROG, NOX, CO] | YES |
| 94 | 2.G) TRANSIT IMPROVEMNTS, [ROG, NOX, CO] | YES |
| 95 | 3.A) TRUCK DISP, RESC, REROUT, [ROG, NOX, CO] | YES |
| 96 | 3.B) DIVERT PORT TRAF TO RAIL, [ROG, NOX, CO] | NO |
| 97 | 4) TRAFFIC FLOW IMPROVE, [ROG, CO, NOX] | YES |
| 98 | 5) NONRECURR CONG RELIEF, [ROG, CO] | YES |
| 99 | 7) CENTRALIZED GRND POWER SYS, [ROG, NOX] | NO |
| 100 | 8) AIRPORT GRND ACCESS, [ROG, CO] | NO |
| 101 | 11) RAIL CONSOLIDATION, [ROG, NOX, CO] | NO |
| 102 | 13) FREEWAY CAPAC ENHANCE, [ROG, NOX, CO] | YES |
| 103 | 17) HIGH SPEED RAIL, [ROG, NOX] | YES |
| 104 | 18) GROWTH MGMNT, [ROG, NOX, CO] | YES |
| 105 | 19.A) LOCAL GOV. ENEGY CONSERVATION, [ALL] | NO |
| 106 | 19.B) WASTE RECYCLING, [ALL] | NO |
| 107 | 19.C) ENERGY PRICING, TAX, SUBS INCEN., [ALL] | NO |
| 108 | I-1) SHIP BERTHING, [NOX] | NO |
| 109 | I-2) LOW EMISS NEW JET AIR ENG, [ROG, NOX] | YES |
| 110 | I-3) FUG FRM MARINE VESS TNKS, [ROG] | YES |
| 111 | I-4) MARINE DIESEL OPER, [NOX] | NO |
| 112 | I-5) LIMIT SULFUR MARINE FUELS, [SOX] | YES |
| 113 | I-6) SWITCHING LOCOMOTIVES, [ALL] | NO |
| 114 | I-7) UTILITY EQUIPMENT, [ALL POLLUTANTS] | YES |
| 115 | 6) AIRCRT/GRND SERV VEH, [ROG, NOX, CO] | NO |
| 116 | 9) REPLACE HIGH EMITNG AIRCRFT, [ALL] | NO |
| 117 | 10) AVIATION VAPOR RECOVERY, [ROG] | YES |
| 118 | 14) RAILROAD ELECTRIF, [ALL] | NO |
| 119 | EMISS STD HD CONSTRUC EQUIP, [ROG, NOX, PM, CO] | NO |
| 120 | EMISS STD OFF-ROAD MTRCYCLES, [ROG, CO] | YES |
| 121 | 12a) STORAGE & MOV. OF PM | YES |
| 122 | 12b) UNPAVED ROADS AND PARKING LOTS | YES |

* : MEASURES HAVE BEEN ADOPTED AS RULES.

: CONTROLS ARE LESS STRINGENT THAN THE AQMP PROPOSAL.

+ : NOX CONTROL IS DELETED.

@ : CONTROLS ARE MORE STRINGENT THAN THE AQMP PROPOSAL.

REVISED ALTERNATIVES CHAPTER

COMPARISON OF AQMP AND SCE CONTROL MEASURES

TIER II CONTROL MEASURES

SCE PLAN

| |
|--------------------------------------|
| LOW EMITTING LDV & MDV |
| LOW EMITTING FREIGHT VEHICLES |
| LOW EMITTING TRANSIT BUSES |
| STRICTER EMISSION STANDARDS FOR ORVs |
| LOW ROG CONSUMER PRODUCTS |
| LOW ROG COATING OPERATIONS |
| EMISSION CHARGES |
| MORE STRINGENT CONTROL TECHNOLOGY |

| |
|-----|
| YES |
| YES |
| NO |
| YES |
| YES |
| YES |
| NO |
| YES |

TIER III CONTROL MEASURES

SCE PLAN

| |
|--------------------------------------|
| NON-REACTIVE SOLVENTS |
| VERY LOW EMITTING PASSENGER VEHICLES |
| LOW EMITTING HDV |

| |
|----|
| NO |
| NO |
| NO |

Attainment of AQMP Objectives

The ambient air quality implications of this proposal have been mathematically modeled by SCE, and separately by District staff. The numerical results of the modeling, and comparisons of all alternatives in a number of environmental factors, are presented in specific responses to comments in this Addendum. Table 2 summarizes and compares the air quality benefits of the proposed AQMP and this alternative. These conclusions are reached based on modeling results, within the limits of predictability. For example, the model predicts that an ambient ozone level of 12.6 ppm will be attained by the AQMP by 2010. The federal ambient ozone standard is 12 ppm, but the amount of uncertainty inherent in mathematical modeling is such that a value of 12.6 ppm can be considered as meeting the federal standard. In contrast, the District's predicted level for the SCE alternative is 13.7 to 15.6 ppm (see Attachment 2). Predictions ranging from 13.7 to 15.6 ppm indicate that the proposed control strategy will not achieve the federal ozone strategy. Moreover, other modeling results indicate this alternative will not meet other ambient air standards identified as project objectives (Table 2).

TABLE 2
COMPARISON OF ATTAINMENT OF AIR
QUALITY STANDARDS FOR THE AQMP AND
ROG PRIMARILY ALTERNATIVE A

| <u>Air Pollutant</u> | <u>AQMP</u> | <u>ROG Alternative A (SCE)</u> |
|----------------------|-------------|--------------------------------|
| Ozone | Yes | No |
| Carbon Monoxide | Yes | No |
| Nitrogen Dioxide | Yes | No |
| PM ₁₀ | Yes | No |

Environmental Impacts

Because the SCE alternative deletes specific control measures that reduce the scope of environmental change compared to the proposed AQMP, the overall potential impacts associated with plan implementation will also be less significant.

The SCE alternative relies primarily on ROG controls to attain air quality standards. Approximately two-thirds of the Tier I and II control measures would be implemented as outlined above and in Table 1. These measures include those which control ROG only, and those with a relatively high ratio of ROG to NO_x emissions reductions. As a result, the potential emissions reductions associated with the control measures for NO_x and to a smaller extent for other air contaminants, would be less than under the proposed AQMP. Environmental impacts of implementing the control measures proposed under this alternative relative to those proposed in the AQMP are shown below.

Air Quality

Impacts from the implementation of NO_x control measures would be largely avoided. These include:

- a. Impacts from the use of selective catalytic reduction such as the direct impacts of ammonia slip, and resultant nitrate formation, causing acid deposition and PM₁₀ formation;
- b. Impacts from clean fuel use, including methanol-caused formaldehyde emissions and impacts from additional electricity generating facilities in the Basin;
- c. Potential NO_x impacts from the oxygenated fuels contingency measure;
- d. Out-of- Basin air quality impacts related to the development of additional electricity generating facilities.

Water

Reduced water quality impact potential from this alternative as compared with the AQMP results from fewer control measures for NO_x and ROG controls. These include:

- a. Avoidance of controls on OCS activities which could result in chemical spills related to control equipment;
- b. Avoidance of ammonia spills associated with SCR;
- c. Avoidance of fuel methanol spills;
- d. Avoidance of the need to use water to control livestock waste emissions, which could contaminate groundwater with nitrates.

Plant Life

Impacts in the Basin may be somewhat less significant than under the proposed AQMP due to the reduced scope of environmental changes brought about by the deletion of a number of control measures. Benefits to plant life from cleaner air would be foregone.

Potential out-of-Basin impacts on plant life, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Animal Life

As with Plant Life above, impacts in the Basin may be somewhat less significant than under the proposed AQMP due to the reduced scope and number of control measures. Benefits to animal life from cleaner air would be foregone.

Potential out-of-Basin impacts on animal life, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Light and Glare

Impacts in the Basin may be somewhat less significant than under the proposed AQMP because the deletion of control measures requiring the construction of control equipment requiring lighting, such as SCR units on power plants, and the construction of new electricity generating facilities, would be avoided.

Potential out-of-Basin impacts on the creation of light and glare, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Land Use

Impacts in the Basin may be somewhat less significant than under the proposed AQMP due to the elimination of a number of control measures that require conversion of additional land or cause additional land use conflicts (refer to Table 3 for such measures, i.e. #47, #54, #62, #96, #100, #101, and #102). The basis for this conclusion is that the deletion of emission control measures would not serve to cause adverse land use impacts, but rather would marginally prevent those impacts from occurring.

Potential out-of-Basin impacts on the demand for land, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Natural Resources

Impacts on wood use would be reduced because some adverse impacts on paper recyclers and reduction of waste paper recycling activity would be avoided because of foregone NOx controls.

Risk of Upset

Potential impacts which may be avoided under this alternative include ammonia slip and spills from SCR use; accidental releases of heavy metals from spent SCR catalyst; and formaldehyde formation and risk of methanol spills from methanol use.

Population

Impacts in the Basin would be essentially the same as under the proposed AQMP because the control measures eliminated in the SCE alternative have few direct or indirect population impacts in already urbanized areas.

Potential out-of-Basin impacts on population, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Housing

Impacts in the Basin will be similar between the two alternatives because population growth is judged equivalent under each alternative. Impacts outside the Basin may be somewhat less significant than under the proposed AQMP due to the reasons given above under "Population."

Transportation

Potential impacts in the Basin which may be avoided under this alternative include:

- a. Short-term street congestion resulting from electric vehicle facilities construction;
- b. Enforcement problems associated with potential restrictions on vehicle registration;
- c. Passenger inconvenience and resistance associated with auto use restrictions;
- d. Traffic problems at non-grade separated intersections associated with the diversion of port-related truck traffic to rail.

Potential out-of-Basin impacts on transportation, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Public Services

Basinwide potential impacts which may be avoided under this alternative include:

- a. Increases in emergency response system response workloads associated with the increased use of alternative fuels such as methanol;
- b. Increased waste transfer impacts on disposal of solid waste;
- c. Creation of the need for the additional treatment and/or disposal of liquid, solid, and hazardous wastes generated from emissions control measures.

Potential out-of-Basin impacts on public services, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Energy and Utilities

Potential impacts which may be avoided under this alternative include:

- a. Increased reliance on out-of-Basin energy supply;
- b. Increased energy use from control equipment;

- c. Increased electricity use for urban mass transit, ship berthing, and rail line haul;
- d. Construction of new energy generating and clean fuel processing facilities outside the Basin, causing a variety of environmental impacts where they are located;
- e. Construction of new transmission lines, substations and switching facilities; .
- f. Creation of magnetic fields under high voltage power transmission lines;
- g. Peak demand increases which may be created by the charging of electric vehicles during high demand periods;
- h. Problems associated with the inability to use electric vehicles for extended out-of-Basin trips.

Recreation

Impacts in the Basin are expected to be similar to those forecasted by the AQMP. This is based on similar expectations of population growth under each alternative.

Potential out-of-Basin impacts on recreation, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Human Health

Potential impacts which may be avoided under this alternative include:

- a. Those associated with the out-of-Basin transport of solid wastes, transferring waste transport and disposal emissions to an out-of-Basin location;
- b. The formation of formaldehyde from methanol combustion;
- c. Impacts from direct methanol exposure;

- d. Direct exposure impacts associated with SCR ammonia use, such as ammonia slip and spills.

Because the standards are based on health studies and are health protective, continued exceedances under this alternative are considered to be a significant adverse environmental impact. The only mitigation measure available under this alternative is attainment of the ambient air quality standards.

Economics

The total quantifiable costs (Tier I) for this alternative are \$1.59 billion annually, compared to the \$2.63 billion for the proposed AQMP. The additional spending on air pollution control equipment and materials will translate into additional demand for these products. The demand will be a stimulus to the local economy. On the other hand, the additional demand would result in very little price pressure on the local economy, because its share of the 2010 gross regional product is only 0.3%.

Extrapolation of control costs beyond Tier I is highly speculative, because the technology for Tiers II and III has yet to be developed and commercialized.

This alternative's focus on ROG controls within a 12-year span will hasten economic changes especially in small businesses because a majority of the ROG controls will impact industries with a high proportion of small businesses.

Costs and savings would not be evenly distributed. Some sectors of the economy, such as those with large amounts of ROG emissions, would experience greater costs, and concomitant physical environmental impacts, than others. Costs and associated environmental impacts which may be avoided under this alternative include those associated with the foregone emissions control measures outlined in Table 1.

Earth

Impacts in the Basin due to construction of SCR devices, highway construction, and urban density increases may be somewhat less significant than under the proposed AQMP because of the deletion and reduced scope a number of control measures.

Potential out-of-Basin impacts on earth resources, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Aesthetics

Impacts in the Basin may be somewhat less significant than under the proposed AQMP, especially the avoidance of visual impacts resulting from the electrification of urban mass transit and railroad line haul systems.

Potential out-of-Basin impacts on aesthetics, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Archeological/Historical/Paleontological

Impacts in the Basin may be somewhat less significant than under the proposed AQMP due to the deletion of a number of measures which would require the development of emission control improvements such as control facilities or urban infrastructure.

Potential out-of-Basin impacts on archeological, historical, or paleontological resources, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

ROG PRIMARILY ALTERNATIVE B (WSPA)

Introduction

This alternative was originally proposed by the Western States Petroleum Association (WSPA, formerly known as the Western Oil and Gas Association or WOGA) as the "Alternative Path" in the Association's comments on the DEIR, and later in a subsequent public workshop.

Description of the Alternative

This alternative incorporates a large portion of the emission control measures proposed for the AQMP. The differences from the proposed Plan are:

- a. The alternative excludes 27 measures contained in Tier I of the proposed AQMP. These exclusions include 14 NO_x emission control measures, one SO_x control measure, 2 particulate matter control measures, one ROG control measure, one control measure for ammonia, and 8 measures for combinations of pollutants. In addition, this alternative modifies the AQMP diesel fuel quality measure, the AQMP fugitive emissions from refinery pumps, and the AQMP valves and compressor measure. It also rolls back recently adopted tighter standards on NO_x emissions from refinery boilers and heaters (District Rule 1109).
- b. The alternative adds six additional control measures to Tier I. These are:
 - Improved light duty vehicle (LDV) and medium duty vehicle (MDV) inspection and maintenance programs implemented by 1992, as opposed to 1995/1996 as proposed in the AQMP;

A lower ROG emission standard of 0.25 gm/mi in 1992 and 0.125 gm/mi in 2000;

Extending the LDV and MDV emissions compliance requirement to 100,000 miles in 1995;

Requiring reduction of LDV evaporative emissions by 50% by 1992;

Requiring reduction of MDT and HDT evaporative emissions by 50% by 2000;

Requiring reduction of HD diesel truck ROG emissions by 65% by 1995;

- c. This alternative excludes all the Tier II measures of the proposed AQMP except the one requiring a 50% ROG reduction on solvents and coatings.
- d. This alternative excludes all Tier III control measures.

The WSPA control measures are compared with those of the in Table 3.

TABLE 3
COMPARISON OF AQMP AND WSPA
CONTROL MEASURES

| ITEM # | 1988 AQMP CONTROL MEASURES | WSPA PLAN |
|--------|--|--------------|
| 1 | A-1) WOOD FLATSTOCK, [ROG] | YES |
| 2 | * A-2) WOOD FURNITURE, [ROG] | YES |
| 3 | A-3) CAN & COIL, [ROG] | YES |
| 4 | A-4) AEROSPACE, [ROG] | YES |
| 5 | A-5) AUTO ASSEMBLY, [ROG] | YES |
| 6 | * A-6) AUTO REFINISHING, [ROG] | YES |
| 7 | * A-7) MARINE VESSELS, [ROG] | YES |
| 8 | A-8a) ARCHITECTURAL COATING, [ROG] | YES |
| 9 | A-8b) ARCH COAT EMISS CHARGE, [ROG] | YES |
| 10 | A-9) PAPER, FABRIC, FILM, [ROG] | YES |
| 11 | A-10) GRAPHIC ARTS, [ROG] | YES |
| 12 | A-11) CLEAN-UP SOLVENTS, [ROG] | YES |
| 13 | A-12) METAL CLEAN & DEG, [ROG] | YES |
| 14 | A-13) DISC MFG, [ROG] | YES |
| 15 | A-14) BLOWING FOAM, [ROG] | YES |
| 16 | * A-15) SEMICONDUCTOR MFG, [ROG] | YES |
| 17 | A-16) PERC DRY CLEANING, [ROG] | YES |
| 18 | A-17) PETRO DRY CLEANING, [ROG] | YES |
| 19 | A-18) UNDERARM PRODUCTS, [ROG] | YES |
| 20 | A-19) DOMESTIC PRODUCTS, [ROG] | YES |
| 21 | A-20) SOLVENT WASTES, [ROG] | YES |
| 22 | A-21) ADHESIVES, [ROG] | YES |
| 23 | B-1) GAS TRANS: PHASE I, [ROG] | YES |
| 24 | B-2) GAS. TRANS: PHASE-2, [ROG] | YES |
| 25 | B-3) OPEN SUMPS, PITS, ..., [ROG] | YES |
| 26 | B-4) PLEASURE BOAT FUEL, [ROG] | YES |
| 27 | B-5) CYCLIC STEAM PROD., [ROG] | YES |
| 28 | B-6) PIPELINE HEATERS, [NOx] | NO |
| 29 | B-7) REFINERY FCC, [SOx] | NO |
| 30 | B-8) PET. COKE CALCINING, [SOx] | YES |
| 31 | B-9) REFINERY PROCESS HEATERS, [PM] | NO |
| 32 | B-10) REFINERY FCC, [PM] | NO |
| 33 | B-11) OCS EXPLORATN., [ALL] | NO |
| 34 | B-12) PETRO REFINRY FLARE, [ALL] | YES |
| 35 | B-13) VALVES, PUMPS & COMPRESSORS, [ROG] | YES# |
| 36 | B-14) OIL FIELD STEAM GEN, [NOx] | NO |
| 37 | * B-15) REFINRY HEATR/BOILR, [NOx] | NO |
| 38 | C-1) COMMERCIAL BAKERIES, [ROG] | YES |
| 39 | C-2) I.C. ENGINES, [ROG, NOx] | YES |
| 40 | C-3) CHARBROILING, [ROG] | YES |
| 41 | C-4) RUBBER PROD MFG, [ROG] | YES |
| 42 | C-5) AFTERBURNERS, [NOx] | NO |
| 43 | C-6) WOODWORKING OPERATIONS, [PM] | YES |

COMPARISON OF AQMP AND WSPA
CONTROL MEASURES

| ITEM # | 1988 AQMP CONTROL MEASURES | WSPA PLAN |
|--------|---|--------------|
| 44 | C-7) SMALL BOILERS, [NOx] | NO |
| 45 | * C-8) INDUSTRIAL BOILERS, [NOx] | NO |
| 46 | C-9) STATIONARY GAS TURBINES, [NOx] | NO |
| 47 | C-10) UTILITY BOILERS, [NOx] | NO |
| 48 | D-1) STARTER FLUID, [ROG] | YES |
| 49 | D-2) OUT-OF-BASIN WASTE DISPOSAL, [ALL] | NO |
| 50 | D-3) POTW, [ROG] | YES |
| 51 | D-4) SWIMMING POOL WATER HEATING, [NOx] | NO |
| 52 | D-5) RES. & COMM. WATER HEATING, [NOx] | NO |
| 53 | E-1) PESTICIDE APPLICATION, [ROG] | YES |
| 54 | E-2) LIVESTOCK WASTE, [ROG] | YES |
| 55 | E-3) AGRICULTURAL DUST, [PM] | YES |
| 56 | F-1) INSTALLATION OF BARCT, [ALL] | YES |
| 57 | F-2) STDS ON GASEOUS FUELS, [SOx] | YES |
| 58 | F-3) LIMITS ON LIQUID FUELS, [SOx] | YES |
| 59 | F-4) CONSTRUCT ROADS/BUILDINGS, [PM] | YES |
| 60 | F-5) AMMONIA EMISSIONS | NO |
| 61 | * F-6) EXEMPT EQUIPMENT | YES |
| 62 | * F-7) SOIL DECONTAMINATION, [ROG] | YES |
| 63 | F-8) NEW SOURCE REVIEW | YES |
| 64 | F-9) LOW EMM. BUILDING CONST, [PM, ROG] | YES |
| 65 | F-10) OIL PHASE OUT, [NOx] | NO |
| 66 | F-11) EMM. MIN. MNGT. PLAN. | NO |
| 67 | IMPROVED I/M FOR AUTO, LDT, MDT, [ROG, NOX, CO] | YES@ |
| 68 | ADD HD GAS VEH TO I/M, [ROG, NOX, CO] | YES |
| 69 | HD VEH SMOKE ENFORCEMENT [ROG, NOX, PM] | YES |
| 70 | LOWER GAS VAP PRESS, [ROG] | NO |
| 71 | LOW ROG, CO STD FOR GLDV'S, [ROG, CO] | YES@ |
| 72 | LOW ROG, NOX, CO MD & LHD TRKS, [ROG, NOX, CO] | YES+ |
| 73 | LOWER NOX STD FOR GAS LDV'S, [NOX] | NO |
| 74 | LOW NOX STD FOR HD DIESEL TRKS, [NOX] | NO |
| 75 | LOW PM STD FOR MD & LHD DIESEL TRKS, [PM] | YES |
| 76 | * NEW DIESEL FUEL QUAL STD, [ROG, PM] | YES# |
| 77 | METHANOL FUELED BUSES, [NOX, SOX, PM] | YES |
| 78 | RETROFIT PARTICLE TRAPS HD DIESEL BUSES, [PM] | YES |
| 79 | EVAP CONTROL/LARG CAN GAS VEH, [ROG] | YES |
| 80 | G-1) URB BUS SYS ELECTRIF, [ALL] | YES |
| 81 | G-2) CLN FUEL RETRO TRAN BUS, [NOX, SOX, PM] | YES |
| 82 | G-3) RADIAL TIRES ON LD MOTOR VEH, [PM] | YES |
| 83 | G-4) CLN FUEL NEW FLT VEH, [ALL] | NO |
| 84 | G-5) SMOKE VEH ENFORCE PRGM, [ROG, NOX, PM] | YES |
| 85 | H-1) BAN NEW DRIVE THRU FAC, [ROG, NOX, CO] | YES |
| 86 | 1.A) ALT WRK WEEK/FLEXTIME, [ROG, NOX, CO] | YES |
| 87 | 1.B) TELECOMMUNICATIONS, [ROG, NOX, CO] | YES |
| 88 | 2.A) EMP RIDESHR/TRANS INCEN, [ROG, NOX, CO] | YES |
| 89 | 2.B) PARKING MGMT, [ROG, NOX, CO] | YES |
| 90 | 2.C) VANPOOL PURCH INCEN, [ROG, NOX, CO] | YES |

COMPARISON OF AQMP AND WSPA
CONTROL MEASURES

| ITEM # | 1988 AQMP CONTROL MEASURES | WSPA PLAN |
|--------|---|--------------|
| 91 | 2.D) MERCH TRANSP INCEN, [ROG, NOX, CO] | YES |
| 92 | 2.E) AUTO USE RESTRICTIONS, [ROG, NOX, CO] | YES |
| 93 | 2.F) HOV FACILITIES, [ROG, NOX, CO] | YES |
| 94 | 2.G) TRANSIT IMPROVEMNTS, [ROG, NOX, CO] | YES |
| 95 | 3.A) TRUCK DISP, RESC, REROUT, [ROG, NOX, CO] | YES |
| 96 | 3.B) DIVERT PORT TRAF TO RAIL, [ROG, NOX, CO] | NO |
| 97 | 4) TRAFFIC FLOW IMPROVE, [ROG, CO, NOX] | YES |
| 98 | 5) NONRECURR CONG RELIEF, [ROG, CO] | YES |
| 99 | 7) CENTRALIZED GRND POWER SYS, [ROG, NOX] | YES |
| 100 | 8) AIRPORT GRND ACCESS, [ROG, CO] | YES |
| 101 | 11) RAIL CONSOLIDATION, [ROG, NOX, CO] | YES |
| 102 | 13) FREEWAY CAPAC ENHANCE, [ROG, NOX, CO] | YES |
| 103 | 17) HIGH SPEED RAIL, [ROG, NOX] | YES |
| 104 | 18) GROWTH MGMNT, [ROG, NOX, CO] | YES |
| 105 | 19.A) LOCAL GOV. ENEGY CONSERVATION, [ALL] | YES |
| 106 | 19.B) WASTE RECYCLING, [ALL] | YES |
| 107 | 19.C) ENERGY PRICING, TAX, SUBS INCEN., [ALL] | NO |
| 108 | I-1) SHIP BERTHING, [NOX] | YES |
| 109 | I-2) LOW EMISS NEW JET AIR ENG, [ROG, NOX] | YES |
| 110 | I-3) FUG FRM MARINE VESS TNKS, [ROG] | YES# |
| 111 | I-4) MARINE DIESEL OPER, [NOX] | NO |
| 112 | I-5) LIMIT SULFUR MARINE FUELS, [SOX] | YES |
| 113 | I-6) SWITCHING LOCOMOTIVES, [ALL] | YES |
| 114 | I-7) UTILITY EQUIPMENT, [ALL POLLUTANTS] | YES |
| 115 | 6) AIRCRT/GRND SERV VEH, [ROG, NOX, CO] | YES |
| 116 | 9) REPLACE HIGH EMITNG AIRCRT, [ALL] | NO |
| 117 | 10) AVIATION VAPOR RECOVERY, [ROG] | YES |
| 118 | 14) RAILROAD ELECTRIF, [ALL] | YES |
| 119 | EMISS STD HD CONSTRUC EQUIP, [ROG, NOX, PM, CO] | NO |
| 120 | EMISS STD OFF-ROAD MTRCYCLES, [ROG, CO] | YES |
| 121 | 12a) STORAGE & MOV. OF PM | YES |
| 122 | 12b) UNPAVED ROADS AND PARKING LOTS | YES |

* : MEASURES HAVE BEEN ADOPTED AS RULES.

: CONTROLS ARE LESS STRINGENT THAN THE AQMP PROPOSAL.

+ : NOX CONTROL IS DELETED.

@ : CONTROLS ARE MORE STRINGENT THAN THE AQMP PROPOSAL.

COMPARISON OF AQMP AND WSPA
CONTROL MEASURES

TIER II CONTROL MEASURES

WSPA
PLAN

| | |
|--------------------------------------|-----|
| LOW EMITTING LDV & MDV | NO |
| LOW EMITTING FREIGHT VEHICLES | NO |
| LOW EMITTING TRANSIT BUSES | NO |
| STRICTER EMISSION STANDARDS FOR ORVs | NO |
| LOW ROG CONSUMER PRODUCTS | YES |
| LOW ROG COATING OPERATIONS | YES |
| EMISSION CHARGES | NO |
| MORE STRINGENT CONTROL TECHNOLOGY | NO |

TIER III CONTROL MEASURES

WSPA
PLAN

| | |
|--------------------------------------|----|
| NON-REACTIVE SOLVENTS | NO |
| VERY LOW EMITTING PASSENGER VEHICLES | NO |
| LOW EMITTING HDV | NO |

TIER I WSPA ADDITIONS NOT IN THE 1988 AQMP

WSPA
PLAN

| | |
|---|--------|
| IMPROVED LDV AND MDV I & M PROGRAMS (1992) | YES(1) |
| ROG EMISSION STANDARD 0.25 gm/mi in 1992 | |
| AND 0.125 gm/mi IN 2000 | YES(2) |
| LDV & MDV COMPLIANCE EXTENDED TO 100,000 mi IN 1995 | YES |
| REDUCE LDV EVAPORATIVE EMISSIONS 50% BY 1992 | YES |
| REDUCE MDV & HDT ROG EMISSIONS 50% BY 2000 | YES |
| REDUCE HDD ROG EMISSIONS 65% BY 1995 | YES |

(1) Accelerated implementation schedule than AQMP

(2) Year 2000 component added

Attainment of the AQMP Objectives

The ambient air quality implications of this proposal have been mathematically modeled by WSPA, and separately modeled by District staff. The numerical results of the modeling, and comparisons of all alternatives in a number of environmental factors, are presented in specific responses to comments in this Addendum. Table 4 summarizes and compares the air quality benefits of the proposed AQMP and this alternative. These conclusions are reached based on modeling results, within the limits of predictability. For example, the model predicts that an ambient ozone level of 12.6 ppm will be attained by the AQMP in 2010. The federal ambient ozone standard is 12 ppm, but the amount of uncertainty inherent in mathematical modeling is such that a value of 12.6 ppm can be considered as meeting the standard. By contrast, the predicted ozone level for the WSPA alternative is 13.2 to 14.9 ppm (see Attachment 2). Predictions ranging from 13.2 to 14.9 ppm indicate that the proposed control strategy will not achieve the federal ozone strategy. Moreover, modeling results indicate this alternative will not meet other ambient air standards identified as project alternatives (Table 4).

TABLE 4
COMPARISON OF ATTAINMENT OF AIR
QUALITY STANDARDS FOR THE AQMP AND
ROG PRIMARILY ALTERNATIVE B

| <u>Air Pollutant</u> | <u>AQMP</u> | <u>ROG Alternative B</u> |
|----------------------|-------------|--------------------------|
| Ozone | Yes | No |
| Carbon Monoxide | Yes | Yes |
| Nitrogen Dioxide | Yes | No |
| PM10 | Yes | No |

Environmental Impacts

This alternative relies primarily on ROG controls to attain air quality standards. Approximately four-fifths of the Tier I and II control measures, plus six additional ROG control measures, would be implemented. The WSPA alternative measures include those which control ROG only, and those with a relatively high ratio of ROG to NO_x emissions reductions. As a result, the potential impacts associated with AQMP control measures for NO_x emissions, and to a smaller extent for other air contaminants, would be less than under the proposed AQMP. Impacts of the WSPA alternative relative to those caused by the proposed AQMP are discussed below.

Air Quality

Impacts from the implementation of NO_x control measures would be largely avoided. These include:

- a. Impacts from the use of selective catalytic reduction such as the direct impacts of ammonia slip, and resultant nitrate formation, acid deposition and PM₁₀ formation;
- b. Impacts from clean fuel use, including methanol-caused formaldehyde emissions and impacts from additional electricity generating facilities in the Basin;
- c. Potential NO_x impacts from the oxygenated fuels contingency measure;
- d. Out-of- Basin air quality impacts related to the development of additional electricity generating and clean fuel generating facilities.

Water

Reduced water quality impact potential from this alternative as compared with the AQMP results from fewer control measures for NO_x and ROG controls. These include:

- a. Avoidance of controls on OCS activities which may result in chemical spills related to control equipment;
- b. Avoidance of ammonia spills associated with SCR;
- c. Avoidance of fuel methanol spills;
- d. Avoidance of the need to use water to control livestock waste emissions, which could contaminate groundwater with nitrates.

Plant Life

Impacts in the Basin may be somewhat less significant than under the proposed AQMP due to the reduced scope of environmental changes brought about by the deletion of a number of control measures that convert additional land to new uses. Beneficial impacts of better air quality would be foregone.

Potential out-of-Basin impacts on plant life, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Animal Life

As with Plant Life above, impacts in the Basin may be somewhat less significant than under the proposed AQMP due to the reduced scope and number of control measures under this alternative that convert habitat to other uses. Beneficial impacts of better air quality would be foregone.

Potential out-of-Basin impacts on animal life, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Light and Glare

Impacts in the Basin may be somewhat less significant than under the proposed AQMP because the deletion of control measures requiring the construction of control equipment requiring lighting, such as SCR units on power plants, and the construction of new electricity generating facilities, would be avoided.

Potential out-of-Basin impacts on the creation of light and glare, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Land Use

Impacts in the Basin may be somewhat less significant than under the proposed AQMP due to the elimination of a number of control measures. The basis for this conclusion is that the deletion of emission control measures shown in Table 3 would not convert land to other uses or conflict with adjacent uses.

Potential out-of-Basin impacts on land use, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Natural Resources

Impacts on wood use would be reduced because some adverse impacts on paper recyclers and reduction of waste paper recycling activity would be avoided because of foregone NOx controls.

Risk of Upset

Potential impacts which may be avoided under this alternative include ammonia slip and spills from SCR use; accidental releases of heavy metals from spent SCR catalyst; and formaldehyde formation and risk of methanol spills from methanol use.

Population

Impacts in the Basin would be essentially the same as under the proposed AQMP because the control measures eliminated in the WSPA alternative have few direct or indirect population impacts in already urbanized areas.

Potential out-of-Basin impacts on population, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Housing

Impacts in the Basin will be similar between the two alternatives because population growth is judged equivalent under each alternative. Impacts outside the Basin may be somewhat less significant than under the proposed AQMP due to the reasons given above under "Population."

Transportation

Potential impacts in the Basin which may be avoided under this alternative include:

- a. Short-term street congestion resulting from electric vehicle facilities construction;
- b. Enforcement problems associated with potential restrictions on vehicle registration;

- c. Passenger inconvenience and resistance associated with auto use restrictions;
- d. Traffic problems at non-grade separated intersections associated with the diversion of port-related truck traffic to rail.

Potential out-of-Basin impacts on transportation, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Additional impacts may be experienced under the WSPA alternative (ROG Primarily Alternative B), but not under the ROG Primarily Alternative A, the AQMP, or any other alternative, from the implementation of six ROG control measures for motor vehicles unique to the WSPA alternative. These measures include an improved vehicle inspection and maintenance program, longer guarantees on the operation of vehicle emission control devices (extended from 50,000 miles to 100,000 miles), a measure to reduce on-road ROG emissions in two stages, and three measures to reduce ROG emissions for all vehicles.

Adverse impacts from improved inspection and maintenance programs are not anticipated. Potential impacts from the extension of emissions compliance to 100,000 miles are unclear since such guarantees may be unobtainable. Likewise, the technology to reduce on-road ROG emissions from 0.25 gm/mi to 0.125 gm/mi does not now exist. The means to reduce the other ROG emissions recommended by WSPA are not specified. This analysis cannot speculate on what the potential impacts might be other than that they may increase transportation costs and affect vehicle operations in an unknown manner.

Public Services

Basinwide potential impacts which may be avoided under this alternative include:

- a. Increases in emergency response system response workloads associated with the increased use of alternative fuels such as methanol;
- b. Increased waste transfer impacts on facilities;

- c. Creation of the need for the additional treatment and/or disposal of liquid, solid, and hazardous wastes generated from emissions control measures.
- d. Out-of-Basin impacts for public services demands associated with disposal site, power plant, and clean fuel facilities development occurring under Tier III of the AQMP.

Additional measures proposed by ROG Primarily Alternative B only may increase agency staff requirements to handle increased inspection and maintenance efforts.

Energy and Utilities

Potential impacts which may be avoided under this alternative include:

- a. Increased reliance on out-of-Basin energy supply;
- b. Increased energy use from additional control equipment;
- c. Increased electricity use for urban mass transit, ship berthing, and rail line haul;
- d. Construction of new energy generating and clean fuel processing facilities outside the Basin, causing a variety of environmental impacts where they are located;
- e. Construction of new transmission lines, substations and switching facilities;
- f. Creation of magnetic fields under high voltage power transmission lines;
- g. Peak demand increases which may be created by the charging of electric vehicles;
- h. Problems associated with the inability to use electric vehicles for extended out-of-Basin trips;

Recreation

Impacts in the Basin are forecasted to be equivalent to that caused by the AQMP.

Potential out-of-Basin impacts on recreation facility demand growth and loss of open space for passive recreation associated with energy facility and disposal site development would be eliminated.

Human Health

Potential impacts which may be avoided under this alternative include:

- a. Those associated with the out-of-Basin transport of solid wastes, transferring waste transport and disposal emissions to an out-of-Basin location;
- b. The formation of formaldehyde from methanol combustion;
- c. Impacts from direct methanol exposure;
- d. Direct exposure impacts associated with SCR ammonia use such as ammonia slip and spills.

Because the standards are based on health studies and are health protective, continued exceedances under this alternative are considered to be a significant adverse environmental impact. The only mitigation measure available under this alternative is attainment of the ambient air quality standards.

Economics

The total quantifiable costs (Tier I) for this alternative are \$1.63 billion annually, compared to \$2.63 billion for the proposed AQMP. The additional demand resulting from the \$1.63 billion spending on air pollution control equipment and materials is only 0.3% of the 2010 gross regional product in the Basin. Thus, the additional demand will exert very little price pressure on the local economy. In addition, this alternative has six additional vehicle

emission control measures not identified in either the proposed AQMP or ROG Primarily Alternative A. These will add an unknown increment to implementation costs. These costs cannot be estimated at this time because the technology to implement some of these proposed control measures does not currently exist. The WSPA alternative could be inferred to also be less severe than with the proposed plan, although it is unclear to what extent.

It must be emphasized that there are several different cost estimates for the plan, and that many of the potentially significant costs are not known at this time. In addition, many of the Tier II and III measures may result in a cost savings.

Costs and savings from this alternative would not be evenly distributed, and some sectors of the economy would experience greater costs, and concomitant physical environmental impacts, than others (such as mobile sources versus stationary sources). Costs and associated environmental impacts which may be avoided under this alternative include those associated with the foregone emissions control tactics, while there would be an added cost increment for the six additional control measures and not achieving healthful air.

Earth

Impacts in the Basin due to construction of SCR devices, highway construction, and urban density increases may be somewhat less significant than under the proposed AQMP because of the deletion and reduced scope a number of control measures as listed in Table 3.

Potential out-of-Basin impacts on earth resources, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Aesthetics

Impacts in the Basin may be somewhat less significant than under the proposed AQMP, especially the avoidance of visual impacts resulting from the electrification of urban mass transit and railroad line haul systems.

Potential out-of-Basin impacts on aesthetics, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

Archeological/Historical/Paleontological

Impacts in the Basin may be somewhat less significant than under the proposed AQMP due to the deletion of a number of measures which would require the development of emission control improvements such as control facilities or urban infrastructure.

Potential out-of-Basin impacts on archeological, historical or paleontological resources, if any, associated with energy facility and disposal site development resulting from proposed AQMP electrification and alternative fuel strategies would be avoided.

IMPLEMENT TIERS I AND II ONLY ALTERNATIVE

Description of the Alternative

This alternative proposes partial implementation of the AQMP as a means of moving closer to the attainment of clean air standards, but does not include the extra emissions control efforts or technological advancements necessary to implement Tier III of the AQMP. Specifically, under this alternative the emission control measures of Tiers I and II would be implemented, while Tier III emissions control strategies would not be implemented as a part of an air quality plan.

The possible Tier III emissions control strategies which would not be implemented under this alternative are:

- a. Elimination of reactive solvents for surface coatings and solvent use;
- b. Exclusive use of very low emitting vehicles.

Attainment of AQMP Objectives

The potential emissions reduction for Tiers I and II are shown on Table 5.

TABLE 5
SUMMARY OF TIER I AND TIER II
EMISSION REDUCTIONS

| | Pollutant (tons per day) | | | | |
|---|--------------------------|-----|------|-----------------|------|
| | ROG | NOX | CO | SO _x | PM |
| Tier I | 617 | 585 | 2867 | 77 | 1112 |
| Tier II | 148 | 107 | 320 | 16 | 212 |
| Total Emissions Reductions | 765 | 692 | 3187 | 93 | 1324 |
| Unrealized Tier III Emissions Reductions | 183 | 121 | 1096 | 17 | 7 |
| Percentage of Unrealized Emissions Reductions | 19% | 15% | 26% | 15% | 0.5% |

The District has modeled the ambient air quality implications of implementing Tier I and Tier II only. The modeling results indicate that with the maximum implementation of Tier I and Tier II control measures in the year 2000, the Basin would meet all the federal and state standards for carbon monoxide and nitrogen dioxide. The Basin would also meet the

federal annual and 24-hour PM₁₀ standards, but would fall short of the state PM₁₀ standards. State and federal ozone standards would not be met.

Table 6 summarizes the attainment status for federal ambient air quality standards for four air contaminants under this alternative, and compares them to the attainment potential of the proposed AQMP, ROG Primarily Alternative A, and ROG Primarily Alternative B.

TABLE 6
COMPARISON OF ATTAINMENT OF AIR QUALITY STANDARDS
FOR TIER I AND II ALTERNATIVE, ROG ALTERNATIVE A,
ROG ALTERNATIVE B AND PROPOSED AQMP

| <u>Ambient Air Standard</u> | <u>Tier I & Tier II</u> | <u>ROG Alt.A</u> | <u>ROG Alt.B</u> | <u>Proposed AQMP</u> |
|---------------------------------|---------------------------------|----------------------|----------------------|--------------------------|
| Ozone (12 pphm) | 16.6 | 13.7-15.6 | 13.2-14.9 | 12.6 |
| CO | | | | |
| 8 hr. (9.5 ppm) | 5.0 | 11.8 | 9.2 | 2.5 |
| 1 hr. (35.0 ppm) | 6.4 | 14.3 | 11.1 | 3.2 |
| NO ₂ (5.34 ppm) | 1.6 | 5.3 | 5.3 | 1.0 |
| PM ₁₀ | | | | |
| Annual (50ug/m ³) | 49 | 78 | 79 | 44 |
| 24 hr. (150 ug/m ³) | 130 | 243 | 247 | 108 |

Environmental Impacts

Impacts which would be experienced under this alternative include those which would result from implementation of the Tier I and Tier II control measures. Impacts would therefore be the same as anticipated for the proposed AQMP, except that the impacts associated with Tier III would be avoided.

The avoided Tier III impacts would include those resulting from large scale electrification, clean fuels use, and exclusive use of non-reactive solvents.

Air Quality

The Basin would experience the air quality impacts identified for Tier I and II implementation as outlined in the AQMP EIR.

Avoided would be those air quality impacts resulting from the out-of-Basin development of energy and clean fuels facilities taking place in response to Tier III control measures.

Water

The Basin would experience water impacts from Tier I and Tier II as outlined in the AQMP EIR.

Potential out-of-Basin impacts would those on water demand and water quality resulting from energy facility development occurring in response to Tier III control measures would be avoided.

Plant Life

This alternative could result in plant life impacts outlined for Tiers I and II in the AQMP EIR. Potential impacts outside the Basin due to energy facility development under Tier III would be avoided.

Animal Life

Animal habitats may be disturbed due to the development of new facilities or urbanization trends in the Basin associated with Tiers I and II. Potential impacts on habitats outside the Basin in response to Tier III energy facility development would be avoided.

Noise

Regional in-Basin noise increases may occur from redistribution of traffic and wind turbines associated with Tiers I and II as outlined in the AQMP EIR. Potential out-of-Basin impacts would be avoided.

Light and Glare

Light and glare impacts would be as outlined for Tiers I and II in the AQMP EIR. Potential out-of-Basin impacts from facility lighting or urban growth resulting from energy facility development caused by Tier III would be avoided.

Land Use

Changes in urban land uses may occur as outlined for Tiers I and II in the AQMP EIR. Changes outside the Basin caused by Tier III energy-related tactics would be avoided because new facilities would not need to be developed.

Natural Resources

Impacts such as the increased use of lumber and decreased paper recycling would be the same as under the AQMP. Tier III natural resource impacts would be avoided.

Risk of Upset

Impacts in the Basin would be essentially the same as for the AQMP except that some impacts may be avoided under this alternative because some reactive solvents would continue to be used. These would include those

associated with the use of clean fuels, such as accidental releases of methanol and solvent substitution with materials which may be pollutants.

Population

Potential impacts would be the same as under the AQMP except that population growth pressures outside the Basin which would take place in response to energy facility development would be avoided.

Housing

Potential impacts would be the same as under the AQMP except that housing growth pressures outside the Basin which would take place in response population growth caused by energy facility development would be avoided.

Transportation

Potential impacts which may be avoided under this alternative include short-term street congestion associated with electrified vehicle facilities construction.

Impacts which may occur would be similar to those of the AQMP.

Public Services

Potential impacts which may be partially avoided under this alternative include those on emergency response system response workloads associated with the increased use of alternative fuels such as methanol. In addition, public services demands to deal with out-of-Basin energy facility development would be avoided.

Energy and Utilities

Potential impacts which may be avoided under this alternative include:

- a. Increased reliance on out-of-Basin energy supply from Tier III energy demands;
- b. Increased electrical energy use for transportation;
- c. Construction of new energy generating facilities outside the Basin;
- d. Construction of new transmission lines, substations and switching facilities;
- e. Creation of magnetic fields;
- f. Peak demand problems;
- g. Problems associated with the inability to use electric vehicles for extended out-of-Basin trips;

Recreation

Implementation of Tiers I and II would result in recreation impacts outlined in the AQMP EIR for Tiers I and II. Potential demand for recreational facilities outside the Basin in response to energy facility development would be avoided.

Human Health

Potential impacts which may be avoided under this alternative include those associated with the formation of formaldehyde from additional methanol combustion; and impacts from methanol exposure.

Because the standards are based on health studies and are health protective, continued exceedances under this alternative are considered to be a significant adverse environmental impact. The only mitigation measure

available under this alternative is attainment of the ambient air quality standards.

Economics

The economics of the Tier III control strategies rely on as yet-to-be available technologies. Therefore, the specific nature of the economic impacts to be avoided by the implementation of this alternative cannot be discerned. The magnitude of the avoided impact would depend upon the costs of implementing the non-reactive and clean fuel vehicle strategies, and possibly from higher electricity costs from out-of-Basin plants. Costs and savings would not be evenly distributed however, and some sectors of the economy would experience greater costs, and concomitant physical environmental impacts, than others.

Earth

Potential impacts would be less significant than under the proposed AQMP because there would be less construction activity taking place both within and outside the Basin to implement the Tier III emissions control strategies.

Aesthetics

Potential impacts on aesthetics are approximately the same as those for the proposed AQMP except that the visual impacts from electrification of transportation systems would be avoided. Potential impacts outside the Basin would be avoided.

Archeological/Historical/Paleontological

Potential impacts in the Basin may be somewhat less significant than under the proposed AQMP due to reduced need for facilities construction to facilitate implementation of Tier III. Potential damage to these heritage resources outside the Basin would be avoided.

IMPLEMENTATION OF LEAST COST MEASURES ONLY ALTERNATIVE

Description of the Alternative

This alternative involves the implementation of emissions control measures which result in cost savings first, followed by the least cost measures in ascending order of cost, until either some predetermined maximum cost/effectiveness level is reached and implementation ceases, or the air quality standards are attained. This alternative differs from the proposed AQMP in that the measures in this alternative are arrayed by cost, rather than by technology availability or amount of air emissions controlled.

The proposed AQMP concludes that all the component emission control measures are necessary to attain the ambient air quality standards. Cost is considered as part of regulatory decisions proposed under the AQMP. Under this alternative, cost would be the primary factor in selecting implementation actions.

Air quality improvement tactics based on the time-of-day, location, and seasonality of emissions may also be considered as part of a least cost alternative at some future time. These tactics have not yet been studied sufficiently by the District to determine their air quality improvement potential. Therefore, they are not being proposed as part of this alternative at this time. They will be considered for inclusion during the rulemaking process if it is determined that they have a beneficial impact on air quality.

Attainment of AQMP Objectives

If it is assumed that all the proposed tactics are necessary to attain the air quality standards, then this alternative would ultimately attain the clean air objectives as well as the proposed AQMP.

However, if a predetermined cost limit is set, then all of the emission control measures proposed in the AQMP may not be implemented, with a resulting emissions reduction shortfall directly related to the cost level selected. For purposes of this analysis, a cost/effectiveness level identical to the current District Best Available Control Technology (BACT) guidelines is assumed to set the upper cost bounds for emission reduction tactics implementation. These cost limits are:

- NO_x - \$24,500 per ton
- SO_x - \$18,300 per ton
- PM - \$5,300 per ton
- ROG - \$17,500 per ton
- CO - no level set

The costs evaluated in this alternative are shown on Table 7.

Note that Table 7 includes only Tier I stationary source control measures, and thus is not representative of the full AQMP implementation costs. These full costs are not known at this time. What follows is a partial analysis based on the known costs.

The ROG emission control measures identified on Table 7 indicate that all but two measures would be implemented if the \$17,500 per ton of ROG emissions controlled criterion is utilized. The avoided control measures are:

- F-7 - Soil Decontamination

- A-05 - Auto Assembly

The NO_x emission control measures identified on Table 7 indicate that all but three would be implemented if the \$24,500 per ton of NO_x emissions controlled criterion is utilized. The avoided control measures are:

- I-1 - Ship Berthing

- C-10 - Utility Boilers

- C-5 - Afterburners

The particulate matter emission control measures identified on Table 7 indicate that all but five would be implemented if the \$5,300 per ton of particulate matter emissions controlled criterion is utilized. The avoided control measures are:

C-3 - Charbroiling

B-9 - Refinery Process Heaters

C-6 - Woodworking Operations

B-10 - Refinery FCC

The SO_x emission control measures identified on Table 7 indicate that three measures would not be implemented if the \$18,300 per ton of SO_x emissions controlled criterion is utilized. The avoided control measures are:

F-2 - Standards on Gaseous Fuels

F-3 - Limits on Liquid Fuels

B-7 - Refinery FCC

Finally, Table 7 has a listing of measures that reduce multiple pollutants. All are assumed to be implemented under this alternative.

Environmental Impacts

If it is assumed that all the tactics proposed in the AQMP are also to be implemented under this alternative, then the potential impacts would also be the same as the proposed plan, differing somewhat only in timing of implementation - but not in the nature or significance of impacts over the life of the Plan.

If it is assumed that tactics will be implemented only until the cost levels of the BACT guidelines are reached, then the impacts of this proposal will be incrementally less than the proposed AQMP. Cost information is only available for a partial listing of the Tier I stationary source emission control tactics, and not for other stationary and non-stationary source tactics, nor for Tiers II and III control measures. Therefore, no impact conclusions can be made concerning these measures since it is unknown whether or

TABLE 7
AQMP CONTROL MEASURE
COST/EFFECTIVENESS

| ITEM # | TIER 1 REG CONTROL MEASURES IN THE 1988 AQMP | EMIS. REDN. TONS/DAY | C/E \$/TON |
|--------|--|----------------------------|---------------|
| 1 * | A-02) WOOD FURNITURE, (ROG) | 29.70 | \$0 |
| 2 | A-04) AEROSPACE, (ROG) | 2.00 | \$0 |
| 3 | B-02) GAS. TRANS. PHASE-2, (ROG) | 0.40 | \$110 |
| 4 | A-18) UNDERARM PRODUCTS, (ROG) | 5.00 | \$400 |
| 5 | B-04) PLEASURE BOAT FUEL, (ROG) | 0.70 | \$1,200 |
| 6 | E-1) PESTICIDE APPLICATION, (ROG) | 3.00 | \$1,300 |
| 7 | A-11) CLEAN-UP SOLVENTS, (ROG) | 11.00 | \$1,500 |
| 8 * | LOW ROG, CO STD FOR GLOV'S, (ROG) | 79.40 | \$1,600 |
| 9 | E-2) LIVESTOCK WASTE, (ROG) | 10.10 | \$1,800 |
| 10 | I-3) FUG FRM MARINE VESS TNKS, (ROG) | 3.90 | \$1,800 |
| 11 * | A-07) MARINE VESSELS, (ROG) | 1.00 | \$2,000 |
| 12 | A-17) PETRO DRY CLEANING, (ROG) | 1.00 | \$2,000 |
| 13 | I-7) UTILITY EQUIPMENT, (ROG) | 17.10 | \$2,000 |
| 14 * | A-06) AUTO REFINISHING, (ROG) | 42.30 | \$2,100 |
| 15 | A-14) BLOWING FOAM, (ROG) | 4.60 | \$2,100 |
| 16 * | A-15) SEMICONDUCTOR MFG, (ROG) | 2.00 | \$2,300 |
| 17 | B-03) OPEN SUMPS, PITS, ..., (ROG) | 2.20 | \$2,900 |
| 18 | A-13) DISC MFG, (ROG) | 2.50 | \$3,300 |
| 19 | B-05) CYCLIC STEAM PROD., (ROG) | 0.10 | \$3,800 |
| 20 | C-1) COMMERCIAL BAKERIES, (ROG) | 1.80 | \$4,400 |
| 21 | A-09) PAPER, FABRIC, FILM, (ROG) | 0.30 | \$5,000 |
| 22 * | LOWER GAS VAP PRESS, (ROG) | 8.90 | \$5,200 |
| 23 | C-4) RUBBER PROD MFG, (ROG) | 11.70 | \$5,600 |
| 24 | A-16) PERC DRY CLEANING, (ROG) | 6.10 | \$7,200 |
| 25 | A-12) METAL CLEAN & DEG, (ROG) | 17.90 | \$10,000 |
| 26 | B-13) VALVES, PUMPS & COMPRESSORS, (ROG) | 11.90 | \$15,000 |
| 27 | F-1) INSTALLATION OF BARCT, (ROG) | 46.60 | \$17,500 |
| 28 * | F-7) SOIL DECONTAMINATION, (ROG) | 10.00 | \$18,000 |
| 29 | A-05) AUTO ASSEMBLY, (ROG) | 1.20 | \$19,000 |

* ARB mobile source measures

* Adopted or Proposed Rules

| ITEM # | TIER 1 NOX CONTROL MEASURES IN 1988 AQMP | NOx REDUCTION (T/D) | COST PER TON (\$/TON) |
|--------|---|---------------------------|-----------------------------|
| 1 | D-4) SWIMMING POOL WATER HEATING, (NOx) | ? | SAVINGS |
| 2 | C-9) STATIONARY GAS TURBINES, (NOx) | 22.6 | \$3,500 |
| 3 | B-14) OIL FIELD STEAM GEN, (NOx) | 0.4 | \$4,000 |
| 4 | B-6) PIPELINE HEATERS, (NOx) | 0.01 | \$4,000 |
| 5 | I-4) MARINE DIESEL OPER, (NOx) | 3.6 | \$5,400 |
| 6 * | C-8) INDUSTRIAL BOILERS, (NOx) | 16.2 | \$6,800 |
| 7 | D-5) RES. & COMM. WATER HEATING, (NOx) | 7 | \$9,900 |
| 8 * | B-15) REFINERY HEATR/BOILR, (NOx) | 25.5 | \$12,700 |
| 9 | C-7) SMALL BOILERS, (NOx) | 2.6 | \$24,000 |
| 10 | F-1) INSTALLATION OF BARCT (NOx) | 4.1 | \$24,500 |
| 11 | I-1) SHIP BERTHING, (NOx) | 4.7 | \$25,300 |
| 12 | C-10) UTILITY BOILERS, (NOx) | 29.2 | \$25,700 |
| 13 | C-5) AFTERBURNERS, (NOx) | 2.5 | \$62,200 |

ADDENDUM 1988 AQMP REVISION

| ITEM # | TIER 1 PM CONTROL MEASURES IN THE 1988 AQMP | PM REDUCTION (T/D) | COST PER TON (\$/TON) |
|--------|---|--------------------------|-----------------------------|
| 1 | G-3) RADIAL TIRES ON LD MOTOR VEH, [PM] | 3.4 | SAVINGS |
| 2 | C-4) RUBBER PROD MFG, [PM] | 0.7 | \$2,500 |
| 3 | F-4) CONSTRUCT ROADS/BUILDINGS, [PM] | 146 | \$4,650 |
| 4 | F-1) INSTALLATION OF BARCT, [PM] | 7.8 | \$5,300 |
| 5 | C-3) CHARBROILING, [ROG, PM] | 10.1 | \$6,200 |
| 6 | B-9) REFINERY PROCESS HEATERS, [PM] | 2.3 | \$12,000 |
| 7 | C-6) WOODWORKING OPERATIONS, [PM] | 35 | \$12,000 |
| 8 | B-10) REFINERY FCC, [PM] | 1.1 | \$29,300 |
| 9 | + NEW DIESEL FUEL QUAL STD, [ROG, PM] | 4.6 | \$65,000 |

* ARB mobile source measures

| ITEM # | TIER 1 SOX 1988 AQMP CONTROL MEASURES | SOx REDUCTION (T/D) | COST PER TON REDUCED (T/D) |
|--------|--|---------------------------|----------------------------------|
| 1 | I-5) LIMIT SULFUR MARINE FUELS, [SOx] | 16.8 | \$3,000 |
| 2 | F-1) INSTALLATION OF BARCT, [SOx] | 3.7 | \$18,300 |
| 3 | F-2) STDS ON GASEOUS FUELS, [SOx] | 1.4 | \$20,000 |
| 4 | F-3) LIMITS ON LIQUID FUELS, [SOx] | 4.5 | \$25,000 |
| 5 | B-7) REFINERY FCC, [SOx] | 16.3 | \$30,000 |

* ARB mobile source measures

| ITEM # | TIER 1 CONTROL MEASURES ** THAT REDUCE MULTIPLE POLLUTANTS IN THE 1988 AQMP | ROG | NOX | C/E ROG (\$/TON) | C/E NOX (\$/TON) |
|--------|---|-------|------|------------------------|------------------------|
| 1 | 1-2) LOW EMISS NEW JET AIR ENG, [ROG, NOx] | 11.30 | | \$800 | |
| 2 | + ADD HD GAS VEH TO I/M, [ROG, NOx, CO] | 1.50 | | \$2,300 | |
| 3 | + LOW ROG, NOx, CO MD & LHD TRKS, [ROG, NOx, CO] | | 31.2 | | \$900 |
| 4 | + IMPROVED I/M FOR AUTO, LDT, MDT, [ROG, NOx, CO] | | 90.3 | | \$3,240 |
| 5 | C-2) I.C. ENGINES, [ALL] | | 30.3 | | \$14,000 |
| 6 | B-11) OCS EXPLORATN., [ALL] | | 8.1 | | \$16,200 |
| 7 | F-10) OIL PHASE OUT, [NOx, PM, SOx] | | 18.1 | | \$38,900 |

** Even though these control measures reduce several pollutants together, the costs are given in terms of the primary pollutant alone.

* ARB mobile source measures

not the costs will be within the identified parameters.

It is probable that several of the Tier II and many of the Tier III measures would not be implemented under this alternative, if the above-identified cost guidelines are used. Therefore, the environmental impacts of this alternative would be similar to, and incrementally less significant than, those identified under the "Implement Tiers I and II Only" alternative. This conclusion would be the same for each environmental impact area discussed in the Tier I and II Only alternative section, with the exception of human health.

Because the standards are based on health studies and are health protective, continued exceedances under this alternative are considered to be a significant adverse environmental impact. The only mitigation measure available under this alternative is attainment of the ambient air quality standards.

DELAYED COMPLIANCE ALTERNATIVE

Description of the Alternative

This alternative proposes the same emission reduction strategies as those in the proposed AQMP. The difference between them is that the delayed compliance alternative would allow a longer time frame for implementation. This implementation deadline is assumed to be either 2017 or 2027 for analytical purposes.

Attainment of the AQMP Objectives

This alternative has not been modeled. There are no currently reliable population, land use, or emission forecasts past 2010. Given the uncertainties of forecasting so far into the future, any data development presented would require extensive speculation. Contributing to this uncertainty are as yet unknowable changes in physical emissions characteristics, advances in emission control technology, and unforeseeable

socioeconomic, environmental, or other changes which could affect emissions patterns.

It is assumed that this alternative would utilize all the proposed AQMP control measures to meet the plan's ambient air quality objectives. However, the AQMP proposed time frame objective would not be met. This alternative would allow alternatively 10 or 20 more years beyond the 20 years envisioned under the AQMP to attain the clean air objectives.

Environmental Impacts

It is assumed that all the proposed AQMP emission control tactics are also utilized in this alternative. Therefore, the potential environmental impacts of this alternative are also assumed to be similar to those for the AQMP, the difference being that they would come into existence over a longer time frame. The impact potential of the utilization of this longer time frame, with its slower control measure implementation rate, probable higher regional population, and more widespread and intense urban land uses, cannot be foreseen at this time because reasonably reliable forecast data are not available. This conclusion applies to all environmental impact areas examined in this section, except for Public Health and Economics. These are discussed separately as follows.

Human Health

This alternative would have a negative impact on human health associated with ambient air quality. Since the ambient air quality standards are based on human health concerns, and are established to protect health, and are intended to be attained as quickly as possible for public health reasons, it follows that delays in attainment will adversely impact human health, since residents of the Basin will continue to breathe unhealthful air after 2007. In addition, ever larger numbers of new residents are expected to be exposed to continuing unhealthful air quality after that date.

Because the standards are based on health studies and are health protective, continued exceedances under this alternative are considered to be a

significant adverse environmental impact. The only mitigation measure available under this alternative is attainment of the ambient air quality standards.

Economics

It is assumed that the proposed AQMP emission control tactics are also utilized in this alternative. Therefore, the potential environmental impacts of this alternative are also assumed to be the same as for the AQMP, the only difference being that they would occur over a longer time frame.

The impact potential of this longer time frame, with its probable higher regional population and more widespread and intense urban land uses, cannot be foreseen at this time because reasonably reliable forecast data are not available. However, it is assumed that the longer time period for implementation will lessen somewhat the projected economic impacts on individuals and business, since they would have more time to make economic adjustments and amortize equipment.

ALTERNATIVE GROWTH SCENARIO

Introduction

The Alternative Growth Scenario option would utilize a growth scenario for the AQMP different from the population, land use, and employment forecasts used in the plan, and which underlie AQMP control measure planning. The purpose of this discussion is to analyze any differences in potential AQMP environmental impacts which may occur if different base growth forecasts are used.

The Southern California Association of Governments (SCAG) has prepared a Growth Management Plan and Environmental Impact Report (SCAG, 1988) which describes the various growth alternatives considered and presents their environmental impact implications. The SCAG alternatives

presented include: GMA-4 Modified (SCAG's Proposed Project); GMA-1 (No Project); GMA-2; GMA-3; GMA-4; GMA-Low, and: GMA-High. These alternatives are described in detail in the above documents.

"Strategy 3", discussed in the following "Alternative Mobility Strategy" alternative, is the forecast used in the preparation of the AQMP. This strategy has the same population forecast as GMA-2, GMA-3, and GMA-4 at the regional level. The forecasts vary at the subregional level. All AQMP emissions forecasting, air quality modeling, and emissions control development are based on this alternative. GMA-4 Modified has become the preferred alternative in the SCAG Growth Management Plan. It is thus the alternative growth scenario examined in this EIR as being the most probable alternative growth management plan which would be implemented.

Description of the Alternative

Regional population forecast totals for Strategy 3 (based on GMA-2) and GMA-4 Modified are equivalent. The difference between them is that growth within the region has been distributed differently under each. GMA-2, also identified as the "Jobs/Housing Balance Alternative" in the SCAG plans, incorporates the assumption that the current imbalance of jobs and housing would be reduced by the allocation of future jobs and housing units.

GMA-4 Modified, like GMA-2, incorporates jobs/housing balance policies intended to bring about a jobs/housing balance within the region. GMA-4, the "Emerging Futures Alternative", gives greater weight to recent growth pressures, government action, and trends, primarily telecommuting, that could alter the spatial pattern and impacts of future development.

Attainment of the AQMP Objectives

The potential air quality implications of GMA-4 Modified have not been modeled. Since the regional forecasts of GMA-4 Modified are equivalent to the forecast utilized in the AQMP, varying at the subregional level, it has been assumed that the AQMP objectives will be attained under this alternative growth scenario. This conclusion is based in part on the regional

equivalence of forecasts, and in part on the fact the GMA-4 incorporates jobs/housing balance policies similar to emissions reduction strategies incorporated into the proposed AQMP.

Environmental Impacts

The environmental impacts of GMA-4 Modified and GMA-3 are presented in the SCAG EIR on the Growth Management Plan SCAG 1988).

All of the potential environmental and socioeconomic impacts of this alternative can be expected to be similar to the AQMP from a regional standpoint, given the equivalence in regional forecasts. However, relative impacts may vary at the subregional and local level.

GMA-4 Modified incorporates a jobs/housing balance forecast somewhat different from that in Strategy 3 (GMA-2). Jobs/housing balance is itself an emissions reduction technique in the AQMP. Therefore, this alternative could imply that AQMP- required emissions reduction efforts in some areas may incrementally not need to be as stringent as proposed to meet air quality standards, because of the implementation of a GMA-4 based regional growth management plan. Since the air quality implications of GMA-4 have not been modeled at this time, these relative changes in emissions control efforts, if any, cannot yet be quantitatively characterized.

ALTERNATIVE MOBILITY SCENARIO

Introduction

The Alternative Mobility Scenario option would utilize a mobility scenario for the AQMP different from the that used in the plan, and which underlies AQMP control measure planning. The purpose of this discussion is to analyze any differences in potential AQMP environmental impacts which may occur if a different mobility scenario is used.

Description of the Alternative

The Southern California Association of Governments (SCAG) has prepared a Regional Mobility Plan and Environmental Impact Report (SCAG, 1988) which describes the various regional mobility plan alternatives considered for adoption by the agency, and presents their environmental impact implications. The Regional Mobility Plan (RMP) incorporates the GMA-4 regional growth forecast as one of its program elements. The mobility plan alternatives discussed in the RMP EIR include:

- a. No Project;
- b. Baseline Growth (GMA-1) with the Existing + Funded system;
- c. Strategy 1; A Facilities Response to Baseline Growth (GMA-1);
- d. Strategy 2; A Facilities Emphasis with Job/Housing Balance (GMA-2);
- e. Strategy 3; A Demand Management Emphasis with Balanced Growth (GMA-2);
- f. Strategy 4; A Demand Management Response to Baseline Growth (GMA-1).

These alternatives are described in detail in the above documents. The AQMP is based on Strategy 3. The Alternative Mobility Scenario incorporates a combination of Strategy 3 and GMA-4.

The RMP contains the following program elements addressing eleven issues salient to regional mobility. These are:

- a. Growth Management Plan (GMA-4);
- b. Transportation Demand Management (TDM);
- c. Transportation System Management (TSM);
- d. Mixed Flow Facilities;
- e. High-Occupancy Vehicle (HOV) Facilities;
- f. Transit and Inter-City Rail Program;
- g. Non-Motorized Transportation;

- h. Financial Strategies;
- i. Aviation;
- j. Maritime, Railroads and Goods Movement;
- k. Subregional Area and Corridor Studies.

Environmental Impacts

The environmental impacts of the RMP are presented in the SCAG EIR on the Regional Mobility Plan (SCAG 1988). This document states that the proposed RMP is most closely related to a combination of Strategy 3 and the GMA-4MJH Growth Management Plan forecast. The EIR states that the impacts of the RMP and Strategy 3 are therefore somewhat similar.

The proposed AQMP utilizes the SCAG Strategy 3 forecast. The regional population forecast in Strategy 3 (GMA-2) is regionally equivalent to GMA-4, and Strategy 3 incorporates jobs/housing balance policies similar to those of the jobs/housing balance control strategies included in the proposed AQMP.

The potential environmental and socioeconomic impacts of this alternative can be expected to be similar to the AQMP from a regional standpoint, given the equivalence in regional forecasts. However, relative impacts may vary at the subregional and local level.

Jobs/housing balance is itself an emissions reduction technique in the AQMP. Therefore, this alternative could imply that AQMP- required emissions reduction efforts in some areas may not need to be as stringent as proposed to meet air quality standards, because of the implementation of the RMP. Since the specific air quality implications of the RMP have not been modeled at this time, these relative changes in emissions control efforts cannot yet be quantitatively identified.

ADDITIONAL CONTROL EFFORT ALTERNATIVE

Description of the Alternative

This alternative envisions the implementation of additional emission control efforts beyond those proposed for the AQMP. This alternative is intended to attain the clean air standards with a reasonable margin of safety in the event that the proposed AQMP and contingency emission control measures are not as effective as anticipated. Possible additional control efforts beyond those in the AQMP are:

- a. Gasoline rationing;
- b. Electrification of all heavy duty vehicles;
- c. Clean fuel for all off-road vehicles;
- d. Mandatory incremental emissions reductions for all District permitted emissions sources as a condition of periodic permit renewal;
- e. Electrification or clean fuel use for all residential, commercial, and industrial sources where fossil fuel use is not otherwise eliminated.

Attainment of AQMP Objectives

Potential emissions reductions for these measures have not been estimated, therefore the potential air quality benefit or margin by which clean air standards might be surpassed is not known. The electrification and clean fuels measures would require advances in technology and/or regulatory requirements beyond those currently envisioned.

Environmental Impacts

Air Quality

Gasoline rationing would not appear to have adverse impacts on air quality, but instead would result in a benefit due to the elimination of emissions from gasoline use. How much gasoline would be in use in the Basin at the time of implementation is unknown, but it is probable that gasoline use would be substantially decreased because of the implementation of AQMP clean fuels, transit, jobs/housing balance, and other transportation emissions reduction measures.

The "electrification" and "clean fuels" measures would result in air quality benefits to the extent that they further reduce emissions in the Basin. However, potential out-of-Basin air quality impacts related to the development of electric generation and clean fuels processing facilities would be incrementally worsened because of increased demands for these facilities.

Increased combustion of methanol could result in increased formaldehyde emissions.

The mandatory emissions reduction measure would have an air quality benefit, but air quality could also be impacted if the additional emissions control efforts require techniques, such as increased use of afterburners, increased disposal of emissions control wastes, or increased energy use, which cause emissions of their own.

Water

Water impacts identified in the analysis of the proposed AQMP would be intensified under this alternative because of the additional emissions control efforts which would be implemented. These include increased potential for methanol and ammonia spills, increased water consumption, out-of-Basin impacts resulting from increases in demand for electricity and clean fuels.

Plant Life

Plant communities might experience increased disruption outside the Basin because of the potential increases in the demand for electricity and clean fuels which in turn would cause an intensification of construction and operation activity for these facilities.

Animal Life

Animal communities, including those with endangered species, might experience increased disruption outside the Basin because of the potential increases in the demand for electricity and clean fuels which in turn would cause an intensification of construction and operation activity for these facilities.

Noise

Implementation of these measures can be expected to change the noise environment to the extent that electrified heavy duty vehicles reduce noise. This noise reduction would be incremental to general noise levels, and may or may not be significant at the local level.

Light and Glare

Implementation of these additional measures can be expected to have similar light and glare impacts to the AQMP. Light and glare increase would be incremental to general light levels in areas out of the Basin where energy facilities are sited, and may or may not be significant at the local level.

Land Use

Implementation of these measures could have adverse land use impacts in urbanized areas if the control measures increase demands for land to site control equipment, for vehicle parking or charging facilities, clean fuel storage areas, safety equipment storage areas, or off-road vehicle storage, refueling or marshaling areas.

Potential land use impacts outside the Basin would be incrementally increased due to the intensification of demand for energy facilities.

Natural Resources

Implementation of any or all of these measures can be expected to have adverse natural resources impacts beyond those anticipated for the AQMP, since these measures would be added to proposed AQMP emission reduction strategies and could consume additional natural resources. However, the significance of these impacts cannot be estimated at this time given the undefined nature of the emission reduction measures, or when implementation might be undertaken.

Risk of Upset

Implementation of these measures can be expected to have incrementally adverse risk of upset impacts beyond those anticipated for the AQMP, since these measures would be added to proposed AQMP emission reduction strategies. These would include increased risks of methanol and ammonia spills. Potential out-of-Basin risks would increase from added energy facilities and disposal sites.

Population

Implementation of the clean fuels and electrification measures could incrementally increase population growth in areas outside the Basin where clean fuels facilities and power plants are located, due to increases in demands on these facilities. Any negative in-Basin impacts would be accentuated.

Housing

Implementation of the clean fuels and electrification measures could incrementally increase housing growth in response to population growth in areas outside the Basin where clean fuels facilities and power plants are located, due to increases in demands on these facilities. Reductions in forecasted population due to additional controls would cause less demand for housing.

Transportation

Implementation of these measures could adversely impact the transportation system. Electrification of heavy duty vehicles, and mandatory clean fuels use for all off-road vehicles (including ships, farm equipment, and airplanes) would require the construction of additional infrastructure to handle their needs, with consequent traffic congestion impacts.

Additional areas for transshipment of cargo or passengers may be needed if it is assumed that electric or clean fueled off-road vehicles would not be able to travel far outside the Basin.

Gasoline rationing could cut down on mobility to the extent that gasoline would be in use at the time of implementation, and the availability of other forms of transportation or fuels.

There would be an intensification of impacts identified under the AQMP, both in-Basin, and outside the Basin.

Public Services

There would be an intensification of impacts identified for the AQMP. These would include additional demands on the emergency response systems associated with increased use of clean fuels, and increased waste generation. New safety systems may need to be developed to deal with potential safety problems of clean fuel use for off-road vehicles.

Energy and Utilities

There would be an intensification of impacts identified under the AQMP. Electrification and clean fuels use, and the installation of additional emissions control equipment, all would incrementally increase demands on energy systems, and could require development of additional energy facilities inside and outside the Basin.

Recreation

Implementation of the clean fuels and electrification measures could incrementally increase demand for recreation facilities in response to population growth in areas outside the Basin where clean fuels facilities and power plants are located, due to increases in demands on these facilities. Gasoline rationing could cut down on mobility to recreate. Recreation demand could be reduced in conjunction with reduced growth over the Plan's life.

Human Health

Health impacts identified for the AQMP would be intensified under this alternative. This would include impacts from the emission of formaldehyde from methanol combustion, impacts from direct methanol exposure, and exposure to ammonia used in SCR.

Economics

Any or all of the measures in this alternative could increase potential major economic impacts, which in turn could have physical environmental consequences. These impacts may be:

- a. Gas rationing - losses in mobility could affect workers abilities to commute to work, increase costs for employees and businesses, force individual and business relocations to sites outside the Basin, increase costs could force businesses to close:
- b. Electrification and clean fuels measures - increased costs, inability to use electric or clean fueled vehicles outside the Basin, possible required transshipment of passengers and goods, additional costs of safety equipment, relocation of shipping services to avoid conversion of vehicles, and relocation of stationary sources to avoid controls:
- c. Mandatory incremental emissions reduction - increased costs might cause business shutdowns or relocations, causing population, government services and public health impacts.

Earth

Impacts on earth resources would be approximately the same as under the AQMP in the Basin. Outside the Basin, there may be an intensification of AQMP impacts in response to additional demands for the development of energy facilities.

Aesthetics

Visual impacts from additional electrification facilities could become more significant. Impacts outside the Basin would worsen due to increases in energy facility development.

Archeological/Historical/Paleontological

Impacts inside and outside the Basin may become incrementally more significant as more land or resources are disturbed in response to energy facility development needs.

NO PROJECT ALTERNATIVE

Description of the Alternative

This alternative would come into force automatically if the proposed AQMP, an AQMP alternative, or modifications of one of these, is not adopted by the District Board. The Board could also make an affirmative choice for this alternative. In any event, such action would imply that the 1979 version of the AQMP would continue in force, since the 1982 version of the AQMP has been disapproved by the EPA.

Attainment of AQMP Objectives

The 1979 AQMP has now become an obsolete document, with outdated population and land use forecasts which have already been exceeded and with emissions control measures designed to attain the air quality standards by a deadline which has already passed. Thus, the 1979 Plan is inadequate to meet Clean Air Act objectives.

There are a number of proposed control measures in the 1979 AQMP which could be implemented which would reduce emissions. Modeling of the Plan's emissions controls has not been updated to include new baseline data, emissions reduction factors, and improvements in modeling techniques. However, given the outdated forecasting and emissions control features of the Plan, attainment of the objective of meeting the clean air standards under the provisions of the 1979 AQMP appears unlikely.

The Regional Mobility Plan and the Growth Management Plan of the Southern California Association of Governments contain a number of policies and actions which would serve to improve air quality. Should SCAG adopt these plans while the District approves the No Project alternative, there would be some improvement in air quality through implementation of the SCAG plans. However, there would be no formal policy and technical coordination between these plans and the 1979 AQMP, reducing the beneficial effects of joint regional plan coordination.

Environmental Impacts

Air Quality

Modeling for the proposed AQMP shows that emission control measures well beyond those contained in the 1979 AQMP are just adequate to attain all the standards, within the parameters of uncertainty associated with modeling. Baseline modeling for the AQMP shows that, even with the implementation of emissions control regulations currently in place and being developed, the No Project alternative would continue the non-attainment status in the Basin for all criteria air contaminants except lead and SO₂. Ozone, carbon monoxide, and nitrogen dioxide air quality can be expected to marginally improve until the end of the century, then worsen again due to the effects of population and employment growth. PM₁₀ air quality will steadily worsen even with implementation of these pending emission controls.

The U. S. Environmental Protection Agency (EPA) is empowered to implement sanctions against nonattainment areas under the authority of the Clean Air Act (CAA). Among the sanctions could be a withholding of air quality planning funds. Potential EPA actions on this issue are unknown at this time, therefore potential air quality impacts from this potential action cannot be speculated upon.

The EPA is currently in the process of preparing a Federal Implementation Plan (FIP) in response to a judgement against the agency concerning failure to attain the air quality standards by the CAA deadlines. The contents of the FIP are unknown at this time. In a recent Federal Register notice on

preparation of the FIP, the EPA indicated that it is considering FIP provisions more stringent than the proposed AQMP. A consequence of the No Project alternative is that there would be no officially adopted AQMP input into the federal FIP planning process, with currently undefined consequences.

Finally, the potential adverse air quality impacts of AQMP implementation would be avoided under the No Project alternative. This would bring about significant adverse air quality impacts associated with continued exposure of Basin residents to non-attainment for ozone, NO₂, CO, and PM₁₀.

Water Quality

Adoption of the No Project alternative could bring about a continued withholding of federal wastewater treatment facility funds. This could result in water quality problems as existing facilities become overtaxed due to continuing urban growth. This assumes local funds are not sufficient to upgrade them properly. Potential water quality impacts of the proposed AQMP would be avoided.

Plant Life

The No Project alternative could result in continued damage to sensitive plants, including agricultural crops and tree, caused by air contaminants. Damage to nonagricultural species, such as pine trees, could also be expected to continue. Potential out-of-Basin plant community impacts would be avoided.

Animal Life

The No Project alternative could result in continued adverse impacts on domestic and wild animal life brought about by polluted air. Potential out-of-Basin animal habitat impacts would be avoided.

Noise

This alternative would appear to have no potential to cause adverse noise impacts since noise producing emission control equipment installation and operation, or activities otherwise caused to be implemented by the proposed AQMP, would not occur. Noise reductions attributable to electrically powered vehicles would also not occur and potential out-of-Basin noise impacts would be eliminated.

Light and Glare

This alternative would appear to have no potential to cause adverse light and glare impacts since light and glare producing emission control equipment installation and operation, or activities otherwise caused to be implemented by the proposed AQMP, would not occur. Potential out-of-Basin impacts would be eliminated.

Land Use

The potential adverse impacts directly associated with the implementation of the proposed AQMP would not occur under this alternative. However, the potential impact of continued EPA sanctions on the Basin for nonattainment, such as the construction ban on new large stationary sources, and the withholding of federal highway construction funds, could result in less housing, especially in outlying housing-rich subregions (such as Lancaster and Victorville, due to the potential impacts of a long-term construction ban.

Urban growth can be expected to continue in the face of a freeze on construction of highways beyond the existing and funded system. There may be growth restraining impacts resulting from a freeze on sewage treatment facility funds, and lack of funding for other public service and utility infrastructure systems, if local funds cannot supplant the withheld federal funds. The magnitude and nature of these effects are unquantifiable but have the potential to dramatically increase construction costs or reduce growth.

Impacts of a related No Project alternative are discussed also in the SCAG EIR on the Growth Management Plan (SCAG 1988). Potential out-of-Basin land use impacts associated with energy facilities and disposal sites would be eliminated.

Natural Resources

This alternative would appear to have no potential to cause adverse natural resources impacts since emission control equipment installation and operation, or activities otherwise caused to be implemented by the proposed AQMP, which would result in increased consumption of natural resources, would not occur. Potential out-of-Basin natural resource impacts would be reduced.

Risk of Upset

This alternative would appear to have no potential to cause adverse risk of upset impacts since emission control equipment installation and operation, or activities otherwise caused to be implemented by the proposed AQMP, which would result in increased upset risks, would not occur. Potential out-of-Basin risks of upset associated with energy facilities and disposal sites would be eliminated.

Population

The potential adverse impacts directly associated with the implementation of the proposed AQMP would not occur under this alternative. However, the potential impact of continued EPA sanctions on the Basin for nonattainment, such as the construction ban on new large stationary sources, and the withholding of federal highway construction funds, could result in growth slowdowns in the Basin and in continued construction of housing, especially in outlying housing-rich subregions, due to the potential impacts of a long-term construction ban.

Urban growth can be expected to continue in the face of a freeze on construction of highways beyond the existing and funded system. There may be growth restraining impacts resulting from a freeze on sewage treatment facility funds, if local funds cannot supplant the withheld federal funds. The magnitude and nature of these effects are unknown.

Impacts of a related No Project alternative are discussed also in the SCAG EIR on the Growth Management Plan (SCAG 1988).

Housing

The potential adverse impacts directly associated with the implementation of the proposed AQMP would not occur under this alternative. However, the potential impact of continued EPA sanctions on the Basin for nonattainment, such as the construction ban on new large stationary sources, and the withholding of federal highway construction funds, could result in less housing, especially in outlying housing-rich subregions, due to the potential impacts of a long-term construction ban.

Urban growth can be expected to continue in the face of a freeze on construction of highways beyond the existing and funded system. Housing costs could rise appreciably in order to support creation of adequate infrastructure. There may be growth restraining impacts resulting from a freeze on sewage treatment facility funds, if local funds cannot supplant the withheld federal funds. The magnitude and nature of these effects are unknown.

Impacts of a related No Project alternative are discussed also in the SCAG EIR on the Growth Management Plan (SCAG 1988).

Transportation

The potential adverse impacts directly associated with the implementation of the proposed AQMP would not occur under this alternative. However, the potential impact of continued EPA sanctions on the Basin for nonattainment, such as the withholding of federal highway construction funds, could result in

substantial traffic flow impacts if growth persists and major circulation system components are not concurrently expanded.

The result of continued growth combined with funding constraints on transportation infrastructure development can be expected a continued worsening of current conditions. Transportation impacts are discussed fully in the SCAG EIR on the Regional Mobility Plan (SCAG 1988).

Public Services

Potential impacts associated with implementation of the proposed AQMP would be avoided under this alternative. Adverse public services impacts, other than those resulting from construction ban, and withholding transportation and wastewater treatment facility funds, are not anticipated since AQMP specific emission reduction measures would not be implemented.

Energy and Utilities

Potential impacts associated with AQMP implementation would be avoided. There may adverse impacts resulting from non-implementation of AQMP energy efficiency and conservation measures, causing increased energy consumption in the future, and in delayed development of alternative energy sources and clean fuels. Such delays could result in increased energy costs due to reliance on fossil fuels, and a worsening of environmental conditions brought about by fossil fuel use. Some of these implications would include the need to develop new or expanded fossil fuel sources and energy production facilities, continued and increasing carbon dioxide emissions contributing to the "greenhouse effect", and new or continuing air pollutant emissions. These impacts, however, would occur independently of the 1979 AQMP.

Recreation

This alternative would appear to have no potential to cause adverse recreation impacts since emission control equipment installation and operation, or activities otherwise caused to be implemented by the proposed AQMP, which would result in increased impacts on recreation, would not occur.

Human Health

Potential Impacts directly associated with implementation of the proposed AQMP would be avoided.

Implementation of the No Project alternative would have adverse human health implications. These impacts would be caused by the fact that ambient air quality standards are health-protective. The standards must be attained in order to avoid continued adverse impacts on human health. Since the No Project alternative would result in continued non-attainment of the ambient air quality standards then public health can be expected to experience continued adverse impacts.

Economics

The potential adverse economic impacts associated with implementation of the proposed AQMP would be avoided.

Implementation of the No Project alternative can be expected to result in a continuance of air pollution damage brought about by continued non-attainment of the ambient air quality standards. Noncompliance with federal standards for ozone and particulates costs an estimated \$3.5 billion to \$7.4 billion annually. These costs include damages to health, materials, agriculture, and visibility, which are all physical environmental impacts. These costs can be expected to continue and worsen with adverse changes in air quality.

The No Project alternative may result in a continuation or strengthening of EPA sanctions against the South Coast Air Basin. Bans currently exist on the construction of major projects (those capable of emitting over 100 tons yearly of an air contaminant), highway funds, and wastewater treatment facilities construction funds. The EPA has the authority to enact other sanctions, but potential future EPA actions are unknown at this time. These funds could have the potential adverse effects of causing:

- a. The location of new businesses, and the relocation of existing businesses, to sites outside the Basin, on the urban fringe;
- b. Increased construction activity in the urban fringe and in other nonurbanized areas, with the concomitant environmental impacts of urban development;
- c. A loss of jobs in the Basin as businesses move because they cannot expand due to the construction ban, loss of mobility, or relocation of available workforce, resulting in the public health and services impacts associated with job loss;
- d. A relocation of the workforce, especially a trained workforce which is particularly mobile, either following jobs or moving away from degraded air quality in the Basin, affecting urbanization rates in other areas, with environmental impact consequences;
- e. Decreased mobility of Basin residents, business travel, and goods movement as congestion increases due to decreased transportation improvement funds, with potential increases in accident rates, and an acceleration of the above mentioned trends.

As identified above, certain economic impacts can have unanticipated environmental consequences outside the Basin, and thus may not be mitigated by the local authorities.

Earth

This alternative would appear to have no potential to cause adverse impacts on earth resources since emission control equipment installation and operation, or activities otherwise caused to be implemented by the proposed AQMP, which would result in increased impacts on earth resources, would not occur.

Aesthetics

This alternative would appear to have no potential to cause adverse aesthetics since emission control equipment installation and operation, or activities otherwise caused to be implemented by the proposed AQMP, which would result in increased impacts on aesthetics, would not occur. However, continued non-attainment of particulate matter and visibility standards would adversely impact visual aesthetics through continued light extinction and view impairment brought about by existing and reduced visibility.

Archeological/Historical/Paleontological

This alternative would appear to have no potential to cause adverse impacts archeological, historical, or paleontological resources since emission control equipment installation and operation, or activities otherwise caused to be implemented by the proposed AQMP, which would result in increased impacts on these heritage resources, would not occur.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The District has analyzed a broad range of reasonable alternatives to meet the federal and state ambient air quality standards. Seven alternatives were selected by the District for consideration and two additional alternatives, SCE's and WSPA's, were evaluated in response to public requests. The comparative merits of each alternative have been presented in the preceeding nine sections, and are summarized on Table 8..

The CEQA Guidelines require additional findings concerning project alternatives that include a discussion of which alternatives can feasibly attain the basic objectives of the project and identify an environmentally superior alternative. The AQMP project objective was summarized on page ii of the Draft AQMP as follows:

TABLE 8
SUMMARY COMPARISON OF ALTERNATIVES

| ALTERNATIVE | AIR QUALITY | WATER |
|--------------------------------------|---|--|
| AQMP | All NAAQS attained. Control technology impacts, eg., formaldehyde emissions from methanol, increased solid waste generation, increased criteria pollutant emissions from afterburners, toxic emissions from reform. solvents | Increased water use, methanol spills, ground water and surface water contamination, and possible liquid waste generation. |
| ROG Primarily Alternative A | NAAQS not attained. Control technology impacts, eg., increased solid waste generation, increased criteria pollutant emissions. Possible EPA sanctions for nonattainment. NOx control technology impacts avoided. | Increased water use and liquid wastes generated from control equipment, possible spills from increased use of fossil fuels. Impacts avoided include reduced water contamination from ammonia & methanol spills, electrification, etc. |
| ROG Primarily Alternative B | Attains only CO NAAQS. Control technology impacts, solid waste generation, increased criteria pollutants from afterburners, toxic emissions from reform. solvents. Possible EPA sanctions for nonattainment. NOx control technology impacts avoided | Increased water use and liquid wastes generated from control equipment, possible spills from increased use of fossil fuels, some clean fuel impacts. Impacts avoided include reduced water contamination from ammonia & methanol spills, electrification, etc. |
| Tiers I & II Only | Attains all but ozone NAAQS. AQMP Tiers I & II control technology impacts: solid waste generation, criteria pollutant impacts from afterburners, & toxic emissions from reform. solvents. Tier III impacts avoided. Possible EPA sanctions for nonattainment. | AQMP Tier III impacts associated with solvent substitution and some clean fuel water contamination impacts avoided. AQMP Tier I & II impacts would be experienced. |
| Least Cost Measures Only | Attains all but ozone NAAQS. Assumes most Tier I & II control measures implemented and no Tier III measures implemented. Impacts similar to Tier I & II Alternative above. Possible EPA sanctions for nonattainment. | Assumes most Tier I & II control measures implemented & no Tier III measures implemented. Impacts similar to Tier I & II Alternative above. |
| Delayed Compliance | Attains all NAAQS. Implements all AQMP control measures over a longer time frame. Environmental conditions after 2010 are unknown. | Impacts the same as the AQMP, occurring over a longer time frame. Environmental conditions after 2010 are unknown. |
| Additional Control Effort | Attains all AAQS. Implements all AQMP control measures plus others. Would have similar impacts to the AQMP, although some impacts may worsen, ie., increased criteria pollutant emissions from afterburners, toxic emissions from reform solvents, electrification, & clean fuels impacts, etc. | Same impacts as the AQMP, some impacts may worsen, eg., possible increase in methanol and ammonia spills and water use impacts. More extensive water quality impacts from control technologies. |
| No Project | No NAAQS attained. Possible short-term air quality improvements, but long-term air quality deterioration. Other benefits avoided, ie., health, traffic circulation improvements, etc. Possible EPA sanctions. | Continued EPA sanctions could result in water quality impacts due to restrictions on waste water system funding. No direct impacts. |

TABLE 8¹
SUMMARY COMPARISON OF ALTERNATIVES

| ALTERNATIVES | HUMAN HEALTH | ECONOMICS | ENERGY & UTILITIES |
|--------------------------------------|---|---|--|
| AQMP | Potential health impacts from Tier III measures eliminated. Impacts similar to the Tiers I & II Only Alternative above. | Economic benefits from clean air include increased revenue to the air pollution control industry. Revenue losses due to agricultural and materials damage will decline. | Increased energy conservation. Increased electricity use, reliance on out of Basin supplies, and implementation of Alt. Fuels Prog. (methanol, nat. gas, solar, propane etc) |
| ROG PRIMARILY ALTERNATIVE A | Continued exposure to criteria pollutants, with continued negative health effects. Other negative health effects include exposure to hazardous and solid wastes and continued exposure to benzene emissions from continued use of gasoline. | Less costly than AQMP. Possible secondary environmental and human health effects from loss of jobs and/or services in those sectors of the economy that experience a disproportionate share of the control costs. | Impacts associated with large scale electrification, particularly out of Basin impacts would be avoided. |
| ROG PRIMARILY ALTERNATIVE B | Continued exposure to criteria pollutants except CO, with associated negative health effects. Possible exposure to hazardous and solid wastes, exposure to toxic emissions from reform. solvents, & continued exposure to benzene emissions due to greater use of gasoline than called for in the AQMP. | Less costly than the AQMP, but includes some additional costs not included in other alternatives. Possible secondary environmental impacts from loss of jobs and/or services in those sectors of the economy experiencing a disproportionate share of the control costs. | Some of the impacts resulting from large scale electrification may be avoided. |
| TIERS I & II ONLY | Potential health impacts from Tier III measures eliminated. Continued health impacts from ozone. Possible negative health impacts from exposure to solid & hazardous wastes, possible exposure to toxic emissions from reformulated solvents, & possible exposure to formaldehyde. | Economic impacts of Tier III, which are substantial are eliminated. Cost impacts more evenly distributed over the Basin economy. Possible secondary environmental impacts from loss of jobs and/or services, but to a lesser extent than the AQMP. | AQMP Tier III impacts associated with electrification, and clean fuels use would be avoided. AQMP Tier I & II impacts would be experienced. |
| LEAST COST MEASURES ONLY | Tier III measures eliminated. Impacts similar to the Tiers I & II Only Alternative above. | It is probable that Tier III would not be implemented. Unclear how many Tier I & Tier II measures would be implemented. Maximum impacts similar to Tier I & II Alternative above. | It is probable that Tier III would not be implemented. Unclear how many Tier I & II measures would be implemented. Maximum impacts similar Tier I & II Alternative above. |
| DELAYED COMPLIANCE | Short-term negative health impacts due to delayed compliance with AAQS. Long-term health benefits associated with attaining all AAQS. Otherwise, impacts similar to the AQMP. | Impacts may be similar to AQMP, but longer time frame may have two effects: economic sectors may more easily accommodate costs over a longer period and inflation may increase control costs. | Impacts the same as the AQMP, occurring over a longer time frame. Environmental conditions after 2010 are unknown. |
| ADDITIONAL CONTROL EFFORT | Health benefits will accrue due to attaining all AAQS. Impacts will approximately the same as for the AQMP, although there may be increases for some impacts, i.e., exposure to solid and hazardous wastes or possible increased exposure to toxic emissions from reformulated solvents. | Impacts similar to those resulting from the AQMP. Costs may increase due to additional controls. Increased costs may further burden the Basin economy result in greater loss of jobs and ensuing possible secondary environmental and human health impacts. Potentially greater demands on government services. | Additional control measures may include a greater emphasis on the use of electricity and other cleaner burning fuels resulting in increased out of Basin impacts. |
| NO PROJECT | Adverse health impacts from continued non-attainment of air quality standards. No other direct impacts identified. | Non-attainment of AAQS will contribute to healthcare costs and costs from damages to materials destruction and agricultural damage. Continued EPA sanctions may affect Basin employment & economy. | Continued reliance on fossil fuels, delayed development of alternative energy sources and increased fuel costs will exacerbate air pollution problems and the greenhouse effect. |

¹ Impacts for Public Services, Plants, Animals, Noise, Light/Glare, Land Use, Natural Resources and Risk of Upset are not included in this table; but are discussed in the text.

Note: Few Significant Impacts for all alternatives for Earth, Aesthetics, Archaeological and Recreation

The Alternative Growth Scenario and the Alternative Mobility Scenario are not included in this table because they are identical to the AQMP. For a discussion of the Population, Housing and Transportation impacts refer to the EIRs for the Growth Management Plan and the Regional Mobility Plan.

"The purpose of the 1988 Revision of the AQMP is to set forth a comprehensive control program that will lead the South Coast Air Basin into compliance with all federal and state air quality standards. This goal has been set by the Board of Directors of the South Coast Air Quality Management District (the District) and the Executive Committee of the Southern California Association of Governments (SCAG).

In 1988, the District Board adopted a policy calling for attainment of all the federal and state health standards at the earliest practicable date, but no later than:

December 31, 1996 for nitrogen dioxide,

December 31, 1997 for carbon monoxide,

December 31, 2007 for ozone and PM₁₀.

Project Objectives and Feasibility

The detailed modeling conducted by District staff demonstrates that only the proposed AQMP (and its derivatives discussed below) can reasonably meet the District policy goals. Depending upon the rules, control measures, and technologies ultimately selected, compliance with state ozone and PM₁₀ standards may not be achieved even when all three tiers of the AQMP are fully implemented. The proposed AQMP, including the Alternative Growth Scenario and Mobility Strategy variations, along with the Additional Control Effort alternative, are the only alternatives that can fulfill project objectives, i.e. the only alternatives considered feasible and reasonable at this time.

Two other alternatives, Delayed Compliance (beyond the year 2007) and Implementation of Least Cost Measures, may be able to fulfill all or portions of the project objectives, but would delay or otherwise impede fulfillment. Thus, the Delayed Compliance alternative is forecasted to have the same impacts as the proposed AQMP, but extended over some undefined but longer time frame. This alternative will not meet the Board's adopted schedule as outlined above.

The Least Cost Measures alternative may not meet project objectives depending on whether a fixed cost limitation is applied to the alternative. If all three tiers of the proposed AQMP are implemented in a least cost hierarchy (i.e. beginning with least cost measures and proceeding sequentially until all control measures are implemented), then the impacts over the life of the Plan would be the same as the proposed AQMP and it could meet the project objectives. If some artificial limit is placed on costs per amount of pollution reduced, this alternative would not meet project objectives and would not be considered feasible.

The final three alternatives (ROG Primarily Alternative A (SCE), ROG Primarily Alternative B (WSPA), and No Project) fail to attain of the health-based air quality standards. The inability of these alternatives to meet the project objectives, renders them infeasible.

Environmentally Superior Alternative

Based on the above analysis, the proposed AQMP can be considered the environmentally superior, viable alternative. Other alternatives were evaluated and determined to pose greater environmental impacts or not to meet project objectives.

ATTACHMENT 2

AN EVALUATION OF SCE AND WSPA CONTROL STRATEGIES

An evaluation of ROG only and high ROG/low NO_x control strategies presented by Southern California Edison Company (SCE) and Western States Petroleum Association (WSPA; formerly Western Oil and Gas Association -- WOGA)

PURPOSE OF ATTACHMENT 2

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PURPOSE OF ATTACHMENT 2

The 1988 AQMP Revision considers an aggressive emission control strategy which will result in the attainment of all Federal National Ambient Air Quality Standards (NAAQS) by the year 2010. The AQMP specifies control measures, a time schedule for the adoption of the control measures, and the expected emission reductions associated with adoption of the control measures. The AQMP adoption schedule is organized into three tiers: Tier I controls are those that can be adopted within the next five years and generally implemented by the year 2000 using currently available technological applications and management practices; Tier II includes already demonstrated control technologies, but requires advancements that can reasonably be expected to occur in the near future; and Tier III programs promote research, development and widespread commercial application of technologies that may not exist yet, but may be reasonably expected given the rapid technological advances experienced over the past 20 years. Control of ROG and NO_x emissions by about 80% is proposed in Tiers I, II, and III.

In addition to the 1988 AQMP Revision, other control strategies have been forwarded as part of the AQMP adoption process. The Southern California Edison Company (SCE) and the Western States Petroleum Association (WSPA, formally the Western Oil and Gas Association-WOGA) proposed alternative control strategies which attempt to demonstrate compliance with the federal ozone NAAQS before the end of the century. They rely most heavily on ROG controls and only suggest limited NO_x control when they occur in conjunction with large ROG emission control measures.

The SCE alternative control strategy utilizes a subset of control measures from the 1988 AQMP Revision. The implementation schedule, however, has been reordered to specify all the ROG-only control measures first and then implementing other high-ROG/low-NO_x reduction measures second. They excluded several control measures which have been adopted by the California Air Resources Board (ARB) and the Southern California Association of Governments (SCAG). The excluded control measures include:

Add Heavy Duty Gasoline Vehicles to Inspection and Maintenance Program -- ARB

New Methanol-Fueled Buses -- ARB

Heavy Duty Vehicle Smoke Enforcement Program -- ARB

Lower NO_x Standard For Gasoline Light Duty Vehicles -- ARB

Lower NO_x Standard For Heavy Duty Diesel Trucks -- ARB

Improved Inspection and Maintenance and Elimination of Excess Emissions for Automobiles -- ARB

Diverting Port-Related Truck Traffic to Rail -- SCAG

Airport Ground Access -- SCAG

Rail Consolidation to Reduce Grade Crossings -- SCAG

Energy Conservation Measures -- SCAG

Therefore, analysis is given in this attachment for two SCE scenarios. The first scenario is the SCE proposal and the second is the SCE proposal adjusted for the overlooked control measures. This latter scenario is termed "SCE Realistic Alternative" within the body of this attachment.

The WSPA alternative control strategy contained 90 percent of the control measures proposed in the AQMP, excluded several other control measures (mostly NO_x), and added six new on-road motor vehicle ROG control measures. The six new measures are as follows:

Earlier implementation of the enhanced inspection and maintenance proposed in the AQMP

Compliance with a 100,000 mile ROG tailpipe emission standard for on-road light-duty vehicles which is more stringent than being proposed by the ARB.

More stringent ROG tailpipe emission standards for on-road light-duty vehicles. The current standard is set at 0.39 g/mile; ARB is proposing to reduce the standard to 0.25 g/mile and WSPA proposes 0.125 g/mile.

More stringent ROG evaporative emission controls on light-duty vehicles.

More stringent ROG tailpipe emission standards for medium- and heavy-duty gasoline trucks.

More stringent ROG tailpipe emission controls on heavy-duty diesel trucks.

Each of these control measures would have to be adopted by the ARB. ARB comments on the WSPA alternative indicate that these control measures cannot currently be implemented and that some of them, in particular the 100,000 mile compliance and the 0.125 g/mile ROG standard on light duty vehicles, are not feasible for the foreseeable future. Therefore, analysis is also provided for two WSPA proposals: the original proposal and WSPA Realistic Alternative. The WSPA Realistic Alternative assumes that the above motor vehicle measures will not be feasible due to technical or other concerns.

This attachment summarizes the air quality impacts of the alternative proposals made by SCE and WSPA as compared to the District's AQMP.

OVERVIEW

The South Coast Air Basin (Basin) is the only region in the United States which still exceeds the federal air quality standard for nitrogen dioxide (NO₂). This section presents historical nitrogen dioxide and nitrogen oxides (NO_x) air quality trends and projected changes in spatial distribution of NO_x emissions. These data are used to estimate future NO₂ air quality in the Basin and the analysis indicates that the NO_x emission controls proposed by SCE and WSPA are not adequate to meet the federal annual average NO₂ standard at inland areas. The SCE and WSPA alternative control scenarios will also not be adequate to bring the entire Basin into compliance with the state one-hour average NO₂ standard. In contrast, the 1988 AQMP Revision will result in attainment of both the federal and California NO₂ standards.

FEDERAL AND STATE NO₂ STANDARDS

The Basin is the only region in the United States currently violating the annual average NO₂ national ambient air quality standard (NAAQS) of 5.32 pphm. The Basin is also in non-attainment with the California state one-hour average NO₂ standard of 25 pphm.

In evaluating the adequacy of the NAAQS for NO₂, EPA expressed concern regarding the potential health effects of repeated short-term exposure to NO₂ in the concentration range of 15 to 30 pphm. Several studies have indicated increased rates of acute respiratory illness and impaired pulmonary function in children living in homes with gas stoves, which produce NO₂, as opposed to children living in homes with electric stoves. Animal studies have shown that short-term peak NO₂ exposure can result in reduced resistance to infection, providing support of the hypothesis that NO₂ from gas stoves contributes to the health effects observed. EPA has interpreted these and other findings as an indication that exposure to short-term NO₂ peaks higher than 50 pphm should be avoided and peak exposures in the range of 15 to 30 pphm may be of concern for children.

EPA has evaluated two approaches for minimizing potential health effects associated with NO₂ exposure in the ambient air. The first approach was to retain an annual average standard at a level between 5 and 8 pphm to provide reasonable protection against short-term peaks. The alternative approach was to establish a one-hour standard at a level below 50 pphm.

EPA adopted the annual average approach for NO₂, mostly because of the practical advantages of not having to formulate a new regulatory program. However, even with annual average concentrations very close to the existing federal standard, the Basin exceeds an hourly peak of 15 pphm on as many as 40 days per year. It is clear that the federal annual standard is not adequate to protect public health. The California state standard (25 pphm one-hour average) should therefore be regarded as a more direct and appropriate standard for this purpose.

MODELING ANALYSIS

An annual average NO₂ dispersion model has been developed and applied by the District (see Appendix V-A of the 1988 AQMP Revision). This model can project annual levels of NO_x with reasonable accuracy when used in conjunction with empirical data developed from District monitoring stations.

The results of the modeling analysis for emission reductions in the 1988 AQMP Revision (Appendix V-A) predict NO₂ levels from 50 percent to 70 percent of the federal standard considering uncertainties. In comparison, a modeling analysis of the industry proposed control plans (SCE and WSPA) projects future NO₂ levels from 80 percent to 112 percent of the federal annual standard. This analysis along with emissions trend projections (see below) indicates that the federal NO₂ standard will be exceeded in some areas of the Basin.

TREND ANALYSIS OF IMPACTS ON ANNUAL AVERAGE NO₂ CONCENTRATIONS

A statistical analysis on air quality trends has also been conducted to provide an alternative indication of the effectiveness of the NO_x emission reductions proposed by SCE and WSPA. This analysis was based on monitoring data collected during 1980 to 1987 at Downtown Los Angeles, Burbank, and Pomona; the only three

monitoring sites to experience an exceedence of the federal NO_2 ambient air quality standard in the past five years (NO_2 and NO_x ambient air quality data collected by the District before 1979 were not included in this analysis because different measurement methods were used, special adjustment factors have to be applied, and there are obvious "jumps" in concentration level with the change of methods even after adjustment).

Trends in NO_2 Air Quality

At Pomona, the annual average NO_2 concentration has been increasing as shown in Figure I-1. Although the increasing trend is not statistically significant, it is important to note that it did not follow the general decreasing trend in the central and coastal portions of the Basin. Pomona actually became the station with the worst annual NO_2 air quality in the Basin during 1987.

Figures I-2 and I-3, illustrate projected NO_x emissions increases between 1985 and 2010 for the base case (without further control) and the industry plans, respectively. Figure I-4 illustrates the projected emissions decreases corresponding to the District 1988 AQMP Revision; no NO_x emissions increase is expected anywhere in the Basin for this case. As can be seen in Figure I-3, under the industry proposals, NO_x emissions on the east side, particularly around Pomona, increase significantly.

Since previous NO_x emissions reductions in the western region have not caused a concurrent reduction of NO_2 concentrations in the Pomona area, the emissions changes shown in Figure I-3 would lead one to conclude that the SCE and WSPA plans will leave the Pomona area out of compliance with the federal NO_2 standard. In contrast, referring to Figure I-4, the District's plan would result in NO_x emissions reductions in both the west and east regions and therefore would achieve compliance. These conclusions are consistent with the modeling results discussed earlier.

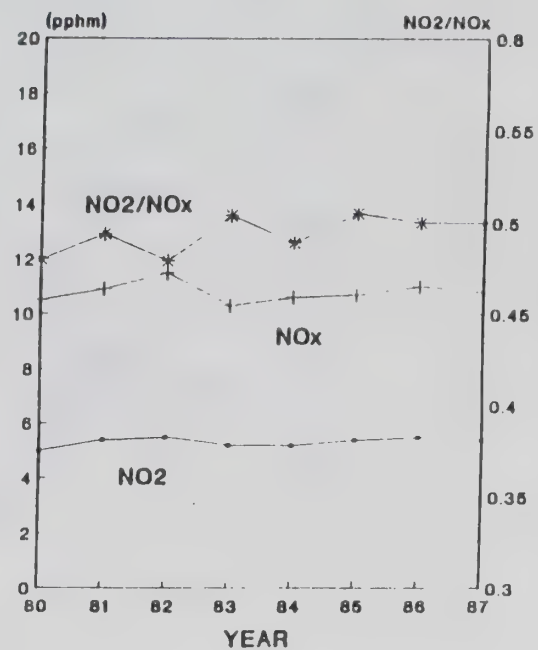
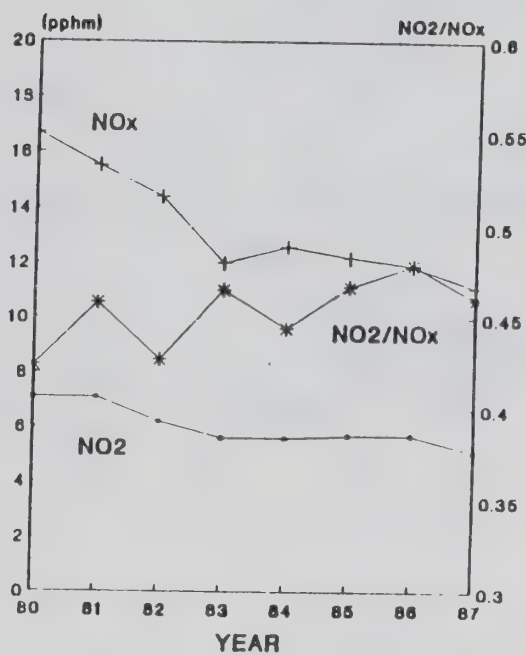
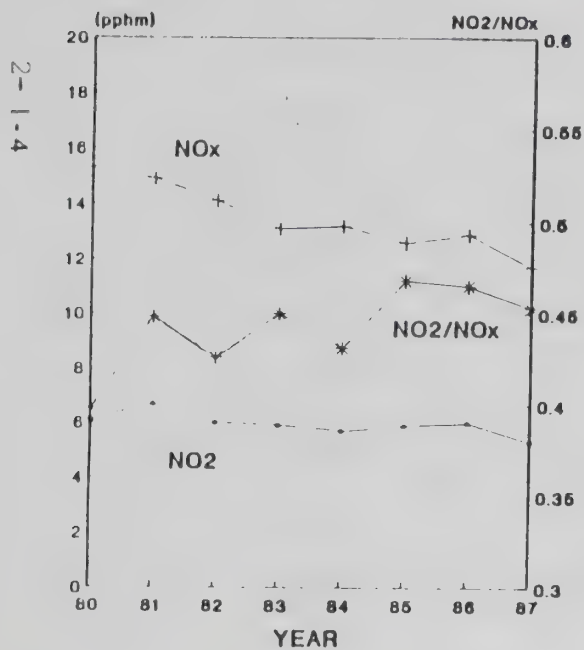
Figure I-1

Annual Average NO_x and NO_2 Concentration
during 1980 - 1987

(A) Downtown Los Angeles

(B) Burbank

(C) Pomona



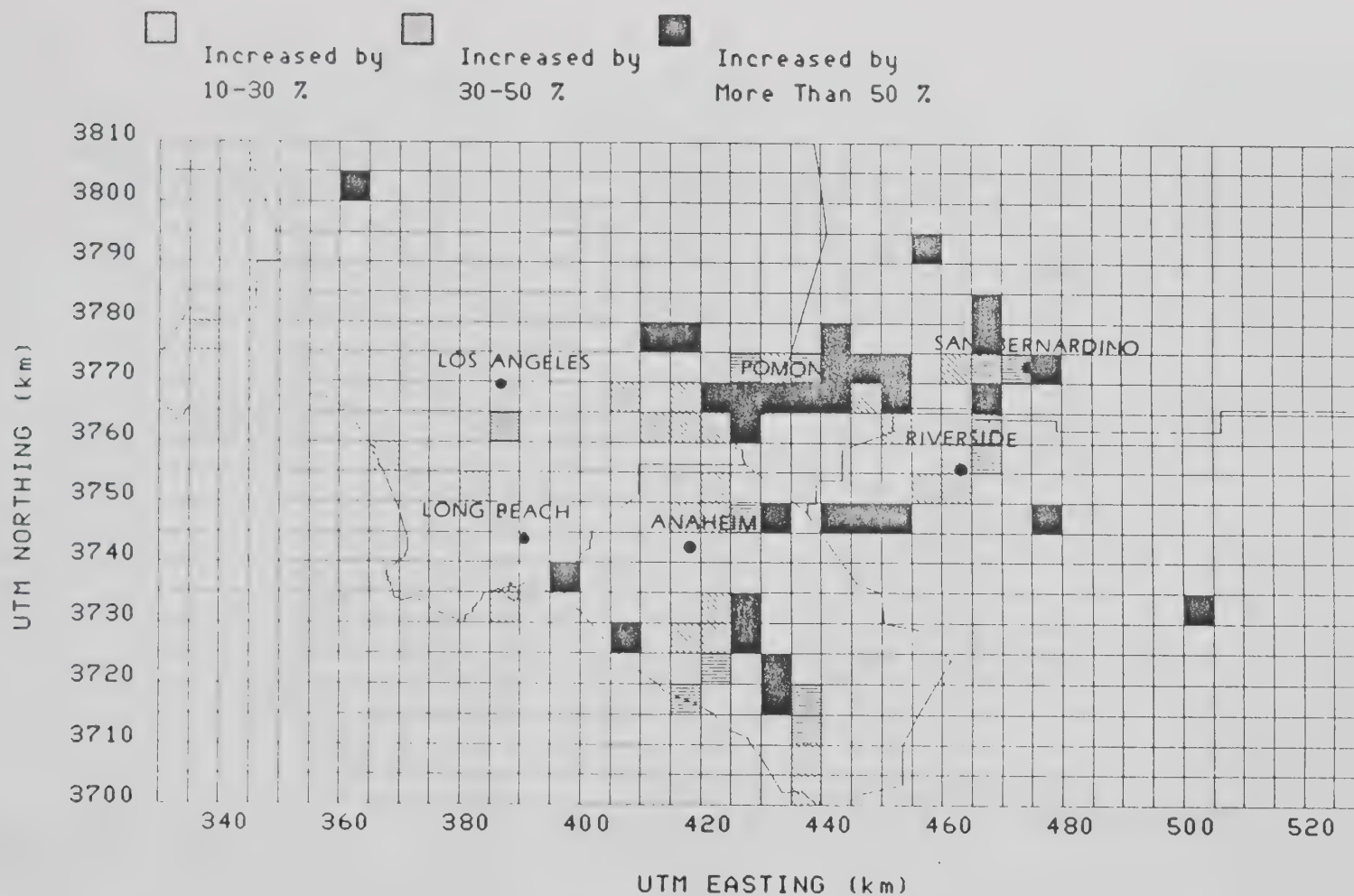


FIGURE I-2
 Increases of NO_x emissions During 1985-2010
 In The South Coast Air Basin Without Further Control
 (Emission Decreases are not shown)

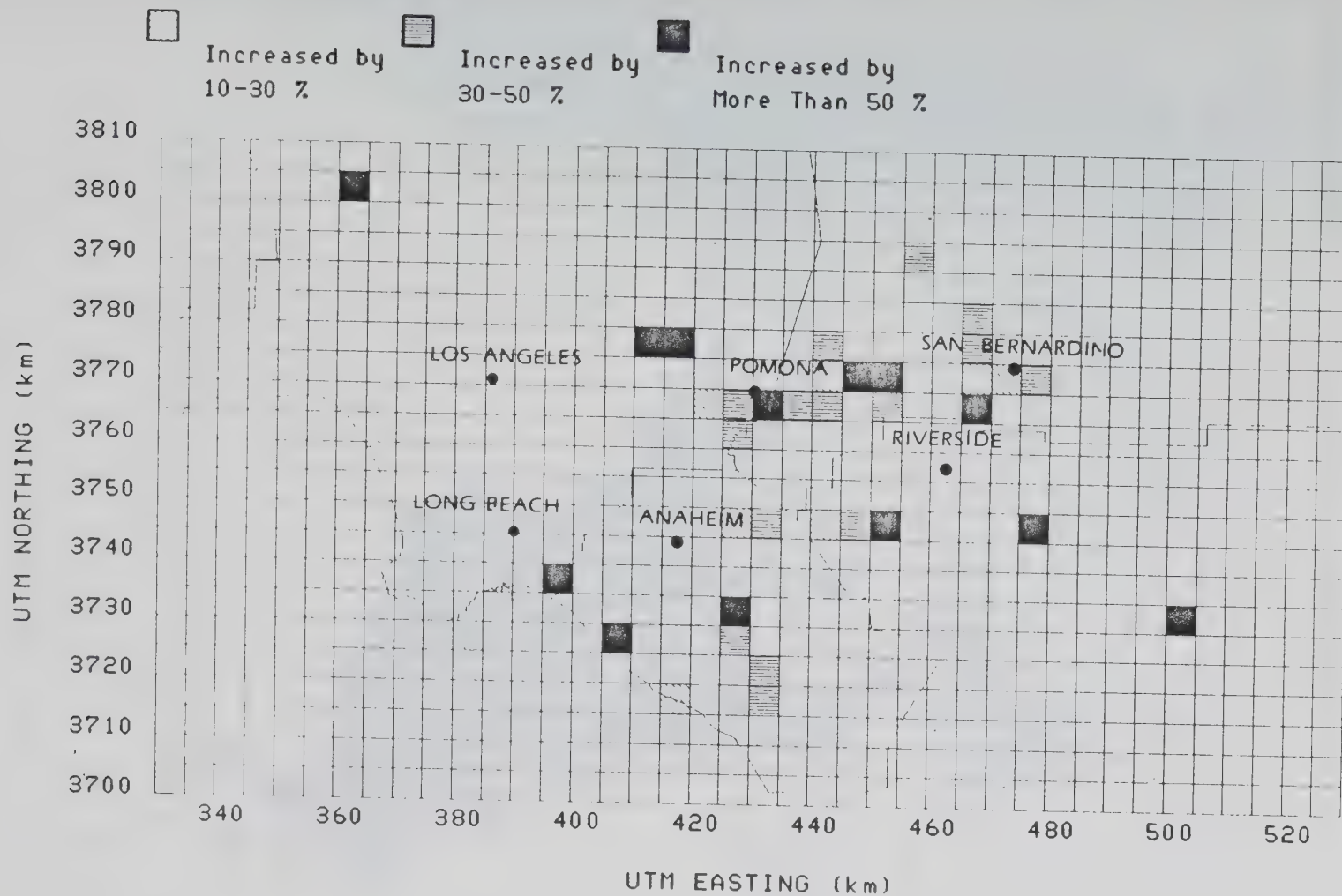


FIGURE I-3
 Increases of NO_x emissions During 1985-2010
 In The South Coast Air Basin With SCE/WSPA Proposed Control
 (Emission Decreases are not shown.)

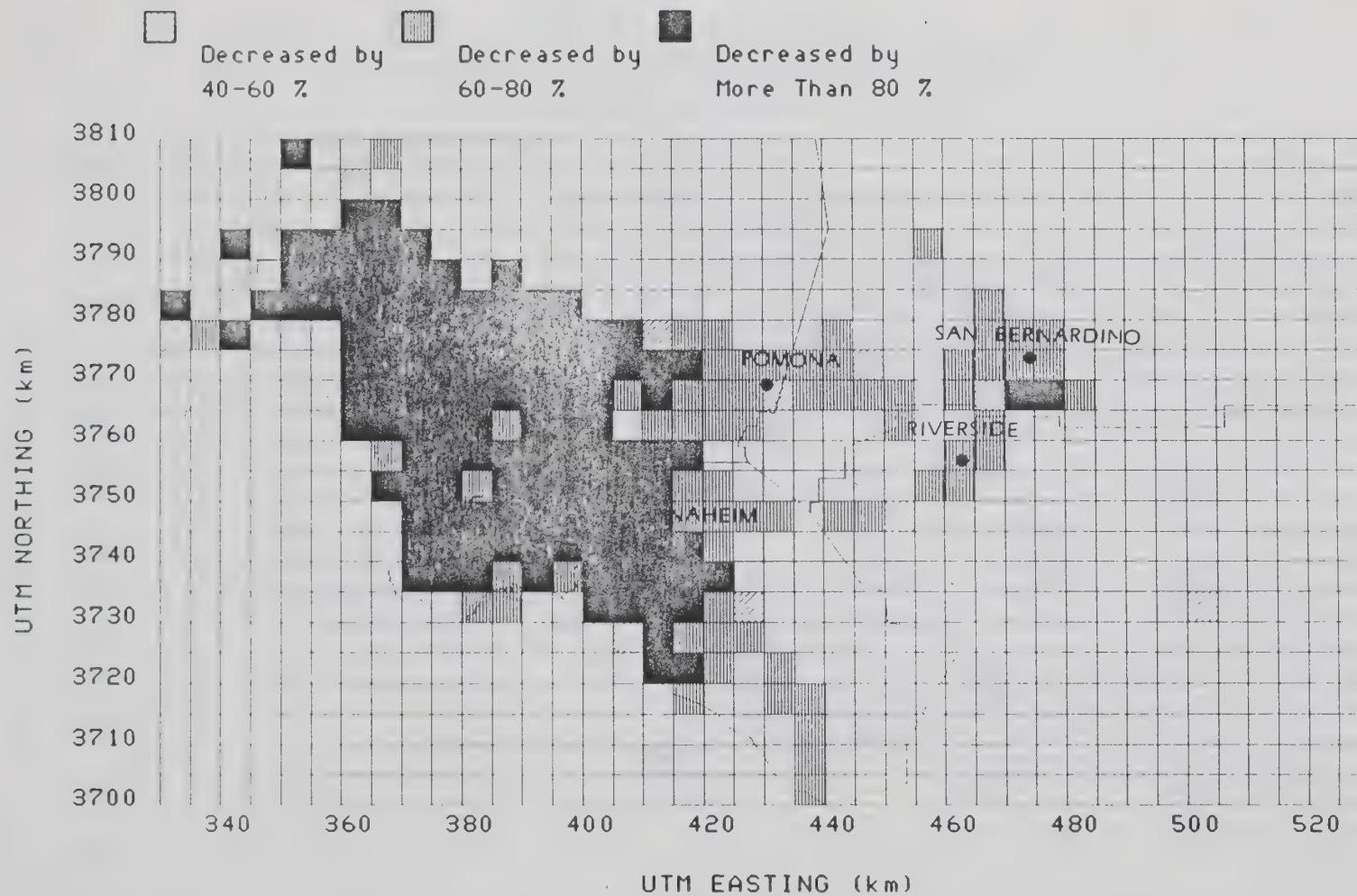


FIGURE I-4
Decreases of NO_x emissions During 1985-2010
In The South Coast Air Basin With District Staff Proposed Control
(There are no NO_x emission increases.)

IMPACTS ON SHORT-TERM NO₂ CONCENTRATIONS

Table I-1 displays the peak hourly NO₂ and NO_x concentrations statistics during 1980 to 1987 in the Basin. As can be seen, the highest hourly NO₂ values are almost twice the state standard. There has been no statistically significant reduction of basinwide annual maximum hourly NO₂ concentrations in the past eight years even though the frequency of violations of the California hourly NO₂ standard has been greatly reduced during the same period. Meteorological variations may contribute to the difficulties in recognizing the historical trend of peak NO₂ air quality. Judging from the high NO₂/NO_x ratio during hours that these annual maximum hourly NO₂ concentrations occurred, a reduction of NO_x emissions will likely achieve a proportional reduction of peak NO₂ concentrations.

Assuming that there will be a linear relationship between NO_x emissions and peak NO₂ concentrations (the most optimistic reasonable assumption), the level of NO_x emissions reduction proposed by SCE and WSPA would not reduce the annual maximum hourly concentration down to the level corresponding to the California one-hour NO₂ standard. The District proposal would result in attainment of this standard.

Table I-1

Peak Hourly NO₂/NO_x Concentration Statistics During 1980-1987
In The South Coast Air Basin

| Year | Station | Basinwide Maximum Hourly Conc. (pphm) | | | Frequency of Violations | | |
|------|-------------|--|-----------------|----------------------------------|-------------------------|--------------------|----------------|
| | | NO ₂ | NO _x | NO ₂ /NO _x | Station Hour | No. of Stations | No. of Days |
| 1980 | Pico Rivera | 54 | 65 | 0.83 | 306 | 16 | 42 |
| 1981 | Downtown LA | 45 | 50 | 0.90 | 217 | 20 | 35 |
| 1982 | Downtown LA | 41 | 47 | 0.87 | 57 | 12 | 16 |
| 1983 | West LA | 47 | 77 | 0.61 | 91 | 12 | 9 |
| 1984 | Reseda | 42 | 42 | 1.00 | 18 | 6 | 13 |
| 1985 | Long Beach | 35 | 66 | 0.53 | 44 | 11 | 7 |
| 1986 | Downtown LA | 33 | 41 | 0.80 | 13 | 6 | 7 |
| 1987 | Downtown LA | 42 | 64 | 0.66 | 10 | 5 | 7 |

OVERVIEW

PM10 concentrations in the South Coast Air Basin (Basin) of California exceed both federal and state air quality standards. PM10 standards have been set based on possible adverse health effects from exposure to high levels of particulate matter. Particulate nitrate is a large fraction of the PM10 concentrations, especially at eastern locations of the Basin. Control of nitrogen oxides (NO_x) emissions is essential in order to reduce ambient nitrate concentrations and achieve attainment of the PM10 standards.

Projections of future PM10 concentrations have been made using results of air quality models for various control strategy options. The concentration predictions for each option are presented and discussed with respect to attainment of the air quality standards. These predictions indicate that the 1988 AQMP Revision will result in attainment of the federal PM10 standards; alternative plans proposed by SCE and WSPA will not achieve the federal standards.

AMBIENT MEASUREMENTS

Nitrate Concentrations

Particulate nitrates account for a major part of the PM10 in the Basin. The atmospheric chemistry leading to the formation of nitrate particles is complex. Particulate nitrate is formed from nitric acid (HNO₃), the principal oxidation product of nitrogen oxides (NO_x) emissions. Therefore, it is imperative that NO_x emissions be reduced if federal and state PM10 standards are to be achieved.

Direct measurements of PM10 nitrates, collected at Basin locations during 1986, are exhibited in Table II-1. Particulate nitrate concentrations typically increase from western, coastal locations to eastern, less urban locations. The highest recorded ambient concentrations of nitrate in the Basin are at Rubidoux, near Riverside. At Rubidoux, nitrates account for 28 percent of the PM10 mass on an annual basis, and 52 percent of the mass during the 24-hour peak PM10 event.

TABLE II-1

PM10 nitrate concentrations in the South Coast Air Basin during 1986

| Station | PM10 ($\mu\text{g}/\text{m}^3$) ^b | Nitrates ^a ($\mu\text{g}/\text{m}^3$) | Nitrates (%) |
|-----------------------------|---|---|-----------------|
| <u>ANNUAL AVERAGE</u> | | | |
| Long Beach | 60.4 | 12.7 | 21.0 |
| Downtown Los Angeles | 63.8 | 13.6 | 21.3 |
| Burbank | 68.1 | 14.2 | 20.9 |
| Ontario | 82.4 | 23.1 | 28.0 |
| Rubidoux | 90.3 | 25.7 | 28.5 |
| <u>PEAK 24-HOUR AVERAGE</u> | | | |
| Long Beach | 163.8 | 74.3 | 45.4 |
| Downtown Los Angeles | 216.8 | 105.6 | 48.7 |
| Burbank | 242.5 | 87.8 | 36.2 |
| Ontario | 310.2 | 138.9 | 44.8 |
| Rubidoux | 321.7 | 166.5 | 51.8 |

a. Nitrate concentrations adjusted for cations and nitrate decay

b. Micrograms per cubic meter

Federal and State PM10 Standards

The annual average primary National Ambient Air Quality Standard (NAAQS) for PM10 is $50 \mu\text{g}/\text{m}^3$ (arithmetic average), whereas the short-term, 24-hour standard is $150 \mu\text{g}/\text{m}^3$ (three exceedences allowed per three years). California imposes more stringent health based standards for PM10 concentrations: $30 \mu\text{g}/\text{m}^3$ annual geometric mean and $50 \mu\text{g}/\text{m}^3$ 24-hour average. During the peak 24-hour PM10 event, the nitrate concentration alone ($166.5 \mu\text{g}/\text{m}^3$) exceeded the federal 24-hour standard for PM10 at Rubidoux. The California short-term PM10 standard was exceeded by the nitrate concentration alone at all locations.

HEALTH CONCERNS

Fine particles found in urban atmospheres are composed of a diverse mixture of compounds including inorganics (nitrate, sulfate) organics (benzene, PAHs and nitroarenes) and heavy metals. Therefore the health effects of this mixture may also be quite diverse including both short-term and long-term health impacts. EPA has established short-term ($150 \mu\text{g}/\text{m}^3$ -- 24-hour average) and long-term ($50 \mu\text{g}/\text{m}^3$ -- annual average) ambient air quality standards for PM10 to prevent adverse health effects (EPA, 1987). California has adopted a 24-hour standard of $50 \mu\text{g}/\text{m}^3$ and an annual average standard of $30 \mu\text{g}/\text{m}^3$. The California 24-hour and annual average standards were set with the intention of

"Prevention of excess deaths from short-term exposures and of exacerbation of symptoms in sensitive patients with respiratory disease. Prevention of excess seasonal declines in pulmonary function, especially in children." (CAC, Section 70200)

In developing these standards many sources of health effects data were considered including epidemiology studies, clinical studies of controlled human exposures, animal toxicology, short-term bioassays and biochemical studies. The development of the final standards focused primarily on epidemiological studies.

Acute Health Effects Considerations

In developing a short-term (24-hour) health-based standard for PM10, EPA considered health effects reported in the literature including mortality^a and various morbidity^a indicators such as reduction in lung function in children.

Mortality - Several investigators have examined the association of airborne particulate levels to daily or short-term mortality in large urban areas. Many of the investigations of this mortality/air pollution association have been carried out on data from London, England (Mazumdar *et al.*, 1982; Ostro, 1984; Schwartz and Marcus, 1986).

Analysis of the London mortality data have shown significant associations between daily mortality and British Smoke (an air pollution measurement method) in most

a. Mortality refers to death and morbidity refers to disease and illness.

to all of the 14 years studied. The correlation is still apparent in the more recent years when airborne particulate levels have been lower (approaching levels more typical of U.S. cities) and there does not appear to be a clear lower threshold for the observed effect (EPA, 1986a). Furthermore, the analyses indicate that particulate matter (measured as British Smoke) is associated with mortality independent of any effects of concurrent SO₂ pollution. Mazumdar *et al.* (1982) have estimated that the mean effects of British Smoke accounted for on the order of 2 to 3% of daily mortality. Ozkaynak *et al.* (1986) have found similar results in an analysis of New York City daily mortality and air pollution data over a 12 year period.

In evaluating this data, EPA concluded that:

"Convincing evidence indicates that relatively small but statistically significant increases in the risk of mortality exist at British Smoke (but not SO₂) levels below 500 $\mu\text{g}/\text{m}^3$, with no indications of any specific threshold levels having been demonstrated at lower concentrations of British Smoke (e.g. at $\leq 150 \mu\text{g}/\text{m}^3$). However, precise quantitative specification of the lower PM levels associated with mortality is not possible, nor can one rule out potential contributions of other possible confounding variables at these low PM levels" (EPA, 1986b)

Mortality effects were therefore considered in the development of a short-term standard, although they were not used to derive a specific threshold for effects.

Morbidity - Studies of morbidity which were most important in the development of the 24-hour standard for PM₁₀ were those by Dockery *et al.* (1982) and Dassen *et al.* (1986). These studies showed a decrease in lung function (forced vital capacity and forced expiratory volume) following episodes of particulate pollution. The changes were small but significant and persisted for a period of two to three weeks. In the Dockery study, there was a higher response in some children indicating that there may be sensitive subgroups in the population.

Chronic Health Effects Considerations

Mortality - Several studies have noted a correlation between mortality rates and long-term particulate pollution levels (EPA 1986b). Some studies indicate that air pollution levels may account for 2% or more of annual mortality (Ozkaynak and Thurston, 1987). These studies justify concerns for possible premature mortality due to particulate pollution, however, they have been given less weight in the

standard setting process for PM10 due to concerns regarding methodological shortcomings. Studies of this type were taken into consideration in the evaluation of the margin of safety for the standard.

Morbidity - The data which was most influential in the development of the annual average PM10 standard were those published by Ware *et al.* (1986) involving about 10,000 six to nine year olds in six U.S. cities. The study reported an association between particulate pollutant levels and reports of cough, bronchitis and respiratory illness. The medical significance of this observed increase in symptoms is likely of health concern. The study was well designed, incorporating adjustments for age, sex, parental education and smoking.

Because of the limited scope and number of long-term quantitative epidemiology studies, qualitative data from epidemiology and animal studies were also considered in the development of the standard. These studies justify concern for sensitive groups (asthmatics, bronchitic individuals and the elderly) and for serious effects such as damage to lung tissue from acid aerosols and carcinogenic effects (EPA, 1986a). The risk that the urban aerosol may produce these responses adds to the need to limit long-term concentrations of PM10.

PM10 PROJECTIONS

The results of receptor and dispersion modeling efforts (see 1988 AQMP Revision, Appendix V-O) were used to predict future (2010) PM10 concentrations for various control scenarios. The models compute the apportionment of source classes responsible for ambient PM10 concentrations. Future PM10 air quality was then evaluated based on the increase (growth) or decrease (control) in emissions from each source class.

Concentration Reductions

Projections for future (2010) PM10 air quality for four control scenarios are presented along with the 1986 base case in Figure II-1 for annual average and in Figure II-2 for the 24-hour peak PM10 event. The control strategies considered include: (1) **1986 Base Year**, (2) **SCE Realistic Alternative**, (3) **WSPA Realistic Alternative**, (4) **1988 AQMP Revision Through Tier II**, and (5) **1988 AQMP**

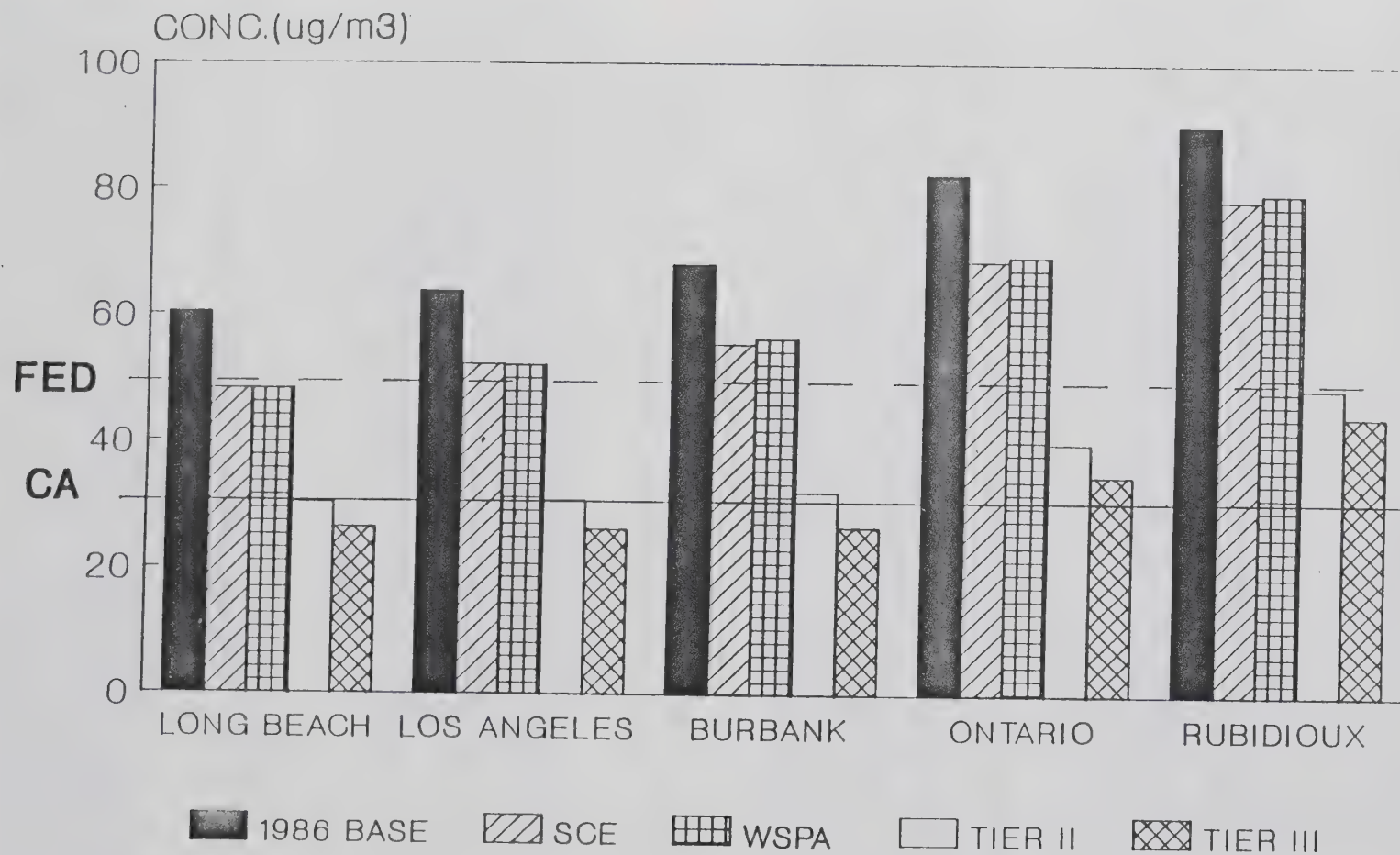


FIGURE II-1
Projected annual average PM10 concentrations

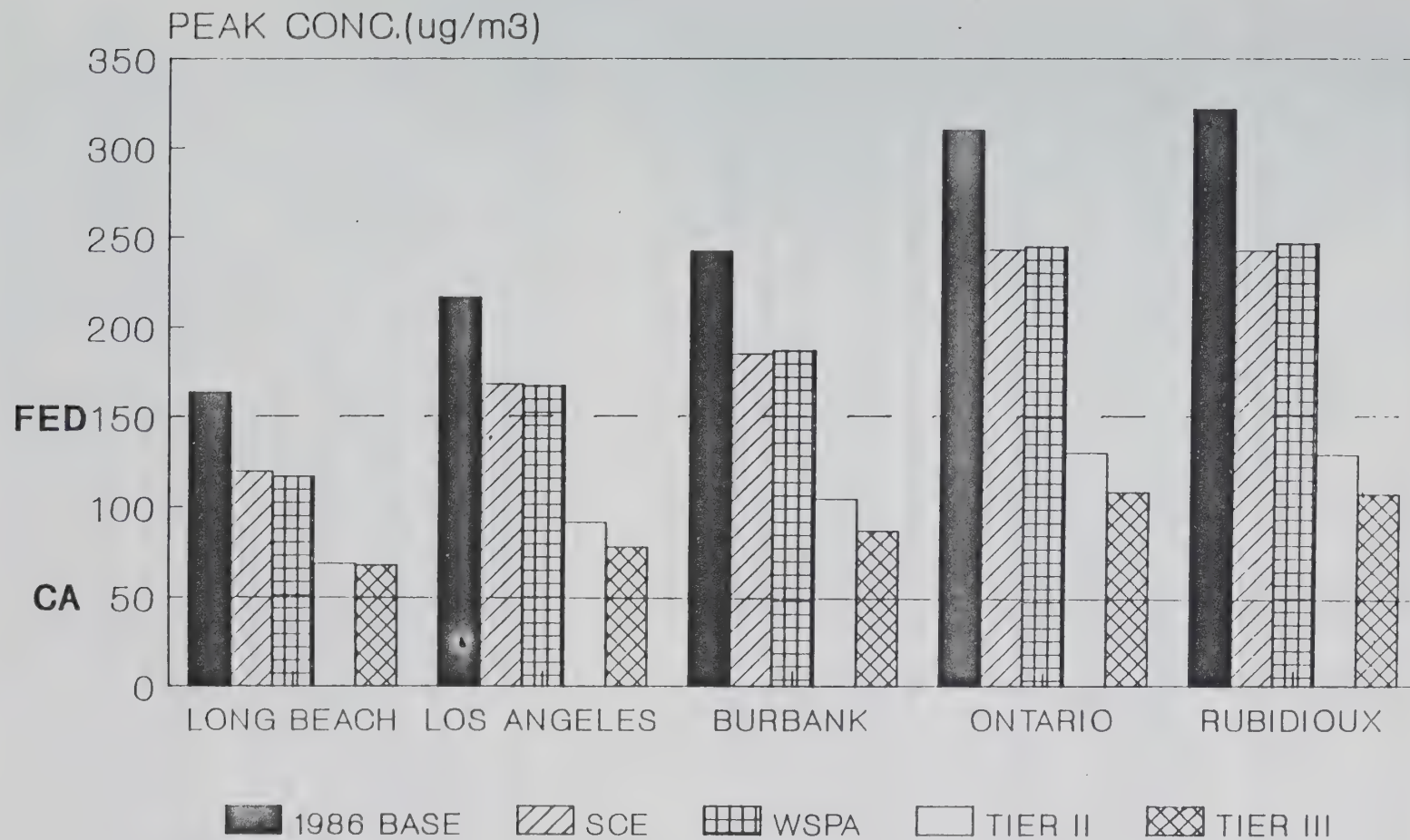


FIGURE II-2
Projected 24-hour peak PM10 concentrations

Revision Through Tier III. A more thorough description of the SCE/WSPA scenarios is included in Attachment A. The alternative scenarios originally proposed by SCE and WSPA would result in higher PM10 estimates than the realistic alternative scenarios analyzed herein. This occurs because the original scenarios contain less NO_x emission reductions.

The SCE strategy is predicted to produce annual average PM10 concentrations 13 to 20 percent lower than 1986 PM10 levels. The WSPA control strategy is projected to attain similar reductions (12 to 20 percent of 1986 PM10 levels). This is in marked contrast with the Tier II control strategy of the 1988 AQMP Revision which is expected to reduce annual average PM10 between 46 and 53 percent of 1986 base case levels, and Tier III which would reduce PM10 concentrations 51 to 61 percent of the 1986 air quality levels.

The reductions to 24-hour peak PM10 concentrations anticipated with these control strategies are shown in Figure II-2. At the analyzed locations, the alternative control strategies proposed by SCE and WSPA are expected to reduce 24-hour peak PM10 concentrations by about 21 to 29 percent of 1986 base case levels. The Tier II control plan will provide a 57 to 60 percent reduction, whereas Tier III reduces 24-hour peak PM10 concentrations between 64 and 67 percent of 1986 levels.

Standard Compliance

Figure II-1 shows that both the SCE and WSPA control strategies will not bring the Basin into compliance with the federal and state annual PM10 standards. It is expected that the annual standard will be exceeded at most locations in the Basin under either of these control plans. The District's Tier II control scenario is expected to reduce PM10 concentrations sufficiently for the federal standard to be met at all locations, but not the state standard. Tier III control will bring the western locations into compliance with the state standards, while the eastern sites will still require some further reductions.

The SCE and WSPA alternative control plans are also predicted to fall short of the federal 24-hour PM10 standards at almost all locations in the Basin, as shown in Figure II-2. Tier II control will reduce peak 24-hour PM10 concentrations well below the federal standard of 150 $\mu\text{g}/\text{m}^3$ throughout the Basin. Tier III control is expected to produce PM10 concentrations which exceed the state short-term standard (50 $\mu\text{g}/\text{m}^3$) by a factor of about two, whereas the peak 24-hour PM10

concentration under the SCE or WSPA plans will be almost five times the standard level.

CONTROL STRATEGY DESIGN

The control strategy proposed by SCE will not bring the Basin into compliance with the federal PM10 standards as proposed in the 1988 AQMP Revision. There are many similarities in the District and SCE analyses. However, a few important differences exist which greatly affect the results. The control strategy analysis performed by SCE uses District's modeling results obtained directly from the 1988 AQMP Revision and is, therefore, consistent regarding the relative source contributions to ambient PM10 concentrations. There is a considerable disparity in the design value chosen for the 24-hour PM10 standard, which is the base case air quality event used as a starting point to which growth and controls are applied. The District uses actual observed information to determine the 24-hour design value, whereas SCE chose to use a statistical measure to arrive at the design value. SCE also selected a different site as the design site. In addition, SCE's estimate of the PM10 emission reduction potential for fugitive dust control measures are overestimated. These deficiencies lead to an inadequate control approach and are discussed in more detail below.

Design Event Selection

Under contract with the District, the Environmental Quality Laboratory (EQL) at California Institute of Technology conducted a special PM10 measurement study during 1986 to gather chemically speciated concentrations at a number of locations in the Basin. Five of these locations coincide with District PM10 monitoring sites. For regulatory purposes (compliance determination and control strategy design site), EPA requirements specify the use of PM10 concentration data collected at a District site. The monitoring station with the highest 24-hour and highest annual average PM10 concentrations in the Basin is Rubidoux, where chemically speciated data is also available for 1986. The peak 24-hour average PM10 concentration observed from every sixth day sampling during 1985 to 1987 occurred at Rubidoux on October 29, 1986. This was a severe meteorological event in that the secondary PM10 formation potential was very large and dispersion was severely restricted. However, this event does not qualify as a "rare and unusual" event by EPA's

definition and cannot be disregarded as an exceptional event, since it is not "an uncontrollable event caused by natural sources of particulate matter or an event that is not expected to recur at a given location" (CFR Part 50 Appendix K).

The 24-hour design value is that PM10 concentration (and chemical profile) that represents the conditions present during the peak 24-hour PM10 occurrence in the Basin. The peak 24-hour PM10 event observed at Rubidoux on October 29, 1986 satisfies this requirement. Rubidoux experiences the highest PM10 concentrations during most of the PM10 "episodes" in the Basin. The chemistry observed during this event is very representative of the chemistry on most other PM10 "episodes". Therefore, this event is used as the design event and the corresponding concentrations (PM10 and chemical species) are considered to be the design values which are to be rolled back to the PM10 standard levels when controls are implemented.

Design Site Selection

SCE chose Fontana as its design site since Rubidoux "...is not representative of the Basin as a whole." The discussion in SCE's Attachment C (SCE, 1988) regarding the choice of the design site refers to CFR 40 Part 58 Appendix D, which outlines a methodology for selecting locations for monitor placement (network design). The design site (and design value) for modeling and control strategy evaluation is not supposed to represent the Basin as a whole. The design value is supposed to be representative of a peak event in the Basin. The federal 24-hour PM10 standard requires that a 24-hour average PM10 concentration level ($150 \mu\text{g}/\text{m}^3$) not be exceeded (more than three times in three years) at all locations in the Basin (including those locations in the Basin that are not measured, if information indicated that a higher concentration existed). The selection of network sites is made such that the monitors represent the surrounding urban, neighborhood, or rural areas. If PM10 concentrations exceed the standard at Rubidoux (and the surrounding community), then the Basin is not in compliance. Choosing Fontana because it is a "representative urban scale site" is therefore not appropriate.

EPA guidelines require the selection of the absolute worst location (highest concentrations) to be the design site to assure basinwide compliance. In fact, the District's control strategy evaluation considers the entire Basin when determining the effectiveness of control (although only five locations are modeled for resulting concentrations). If a control measure affected only one location (Rubidoux, for

example) then the other locations modeled would not show improvement after application of this measure. Examination of the Tier II control scenario demonstrates that this level of control will bring all locations to within the level of the federal 24-hour PM10 standard.

Design Value Computation

SCE employed a statistical approach to arrive at the design value, or "expected highest 24-hour average." This was accomplished by a graphical method whereby the "design value corresponds to a frequency of 1/365 as read off a graph of the empirical frequency distribution of the data." SCE fit the data to the log-normal distribution (since this distribution has graph paper available and is often used to fit air quality data). This procedure is only valid if sufficient data exists and if the data can be shown to be of this type of frequency distribution. However, the log-normal distribution is not the proper distribution to use for PM10 concentrations. It is a centralized distribution, meaning that the overwhelming majority of 24-hour concentrations, which are typically much lower than the peak, have a very large influence on the fit of the distribution, determining the shape (i.e. slope) of the curve. If one examines air quality data fit to log-normal distributions, it is usually observed that the data fit well in the central portion of the distribution but not in the tails of the distribution, which is of interest here.

It is much better to assume an extreme value distribution (i.e. Weibull or Gumbel distribution) that places more emphasis on the data observed near the upper tail. Neil Frank, in the EPA PM10 Guidelines, recommends fitting an empirical distribution that utilizes the top 10 percent of the data to predict the "expected maximum 24-hour concentration." The District computed 24-hour PM10 design values assuming this distribution, using three years of PM10 data. At some locations, the design value was lower than the peak observed PM10 concentrations, while at other locations it was higher.

EPA's PM10 SIP Development Guideline recommends that the 24-hour design concentration be determined by a graphical estimation only when sufficient data exists. That means daily sampling for a minimum of three years or 1095 daily values. Unfortunately, with the one in six day sampling schedule at Rubidoux, less than 200 values have been recorded. The guideline then recommends using the "table look-up" (Table 6-1) approach. Table 6-1 indicates the highest recorded value should be selected as the design value. For Rubidoux this value is $294 \mu\text{g}/\text{m}^3$.

District staff included a nitrate adjustment procedure to remove the bias present in the nitrate measurement results. This was necessary because it was discovered that a large amount of the collected nitrate (approximately 20 percent at Rubidoux) was lost from the filters between the time of collection and laboratory analysis. (This problem has since been corrected by a modification of storage procedures.) This resulted in an underestimate of the nitrate concentrations and PM10 concentrations during 1986. District staff carried out an experiment to estimate this bias. The results from this work are documented in the 1988 AQMP Revision (Appendix V-F). SCE did not utilize this information and is therefore using PM10 and nitrate design value concentrations which are lower than those used by the District staff.

Fugitive Dust Control

An additional discrepancy between the SCE PM10 analysis and the District's 1988 AQMP Revision exists concerning the PM10 emissions removal efficiency for fugitive dust control. SCE assumed that fugitive dust controls could remove 80 percent of the airborne PM10 emissions from this area source class. District's estimates are much lower, in the range of 15 to 25 percent removal for known control approaches. SCE did not furnish any documentation to support its estimate along with cost estimates for this extreme level of dust abatement.

Complete control of fugitive dust alone will not bring the Basin into compliance with either the annual or 24-hour NAAQS for PM10. Examination of Figure II-3 (EQL data) reveals that fugitive dust, which contributes to the crustal components of PM10, constitutes, at most, 28 percent to the annual average PM10 concentration (at Rubidoux). Even if this were entirely fugitive dust (other sources contribute some crustal components) then complete removal of this $24.1 \mu\text{g}/\text{m}^3$ would not reduce the annual average PM10 concentration at Rubidoux to below $50 \mu\text{g}/\text{m}^3$. The annual average PM10 concentration at Rubidoux would still be over $60 \mu\text{g}/\text{m}^3$. During the peak 24-hour PM10 event the crustal fraction is much smaller (12 percent) and complete removal is not nearly sufficient for attainment of the 24-hour PM10 standard.

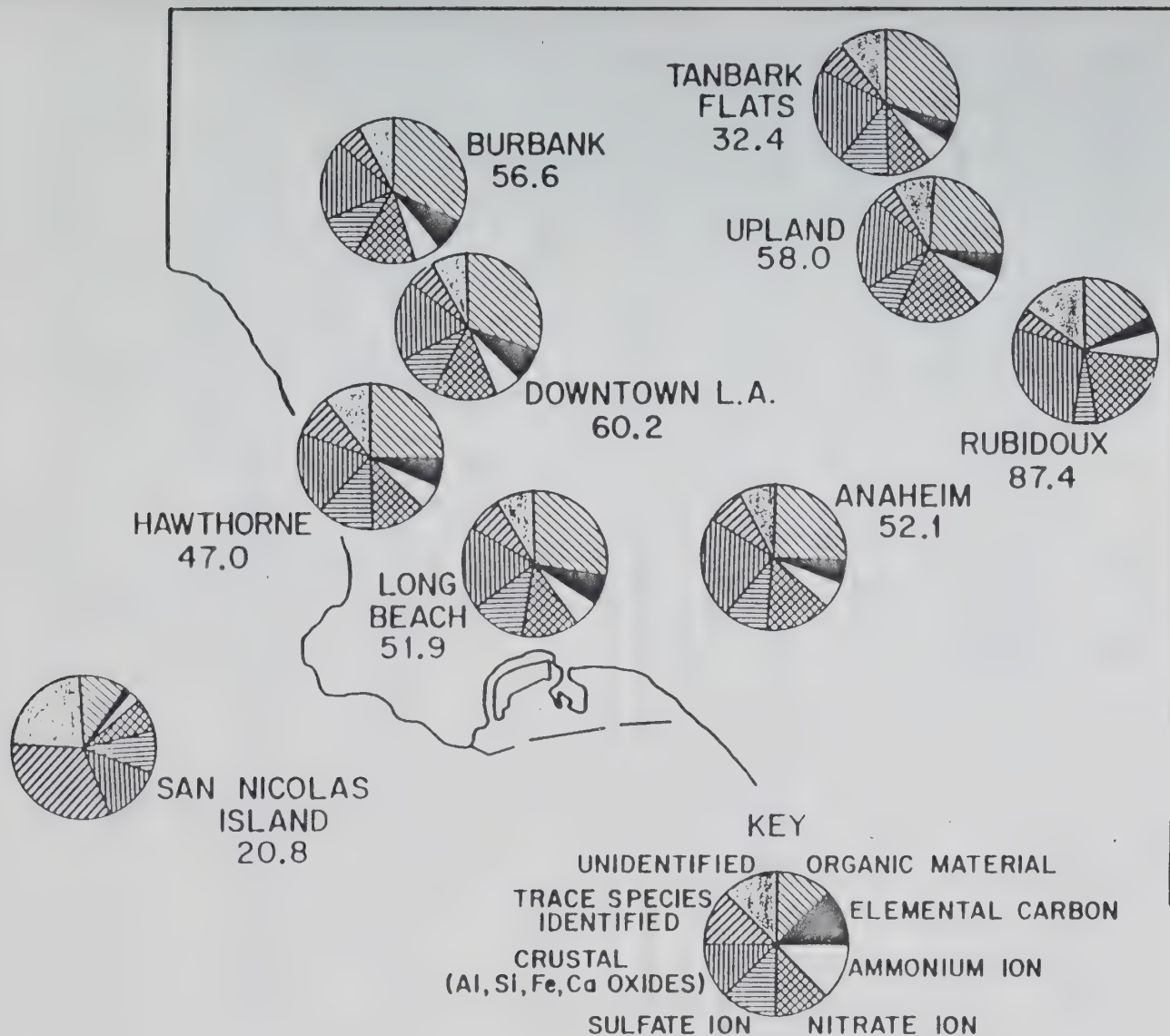


FIGURE II-3

Chemical composition of annual average PM10 during 1986 (values in $\mu\text{g}/\text{m}^3$)

Summary

District's evaluation of control strategies for PM10 abatement is the result of a multi-year coordinated effort of many researchers. The engineering decisions that were made regarding modeling, design values, and control implications have been considered carefully and are consistent with each other. The analysis performed for PM10 in the 1988 AQMP Revision indicates that a level of control corresponding to Tier II controls is required and will bring the entire Basin to meet both the federal annual and 24-hour PM10 standards at all locations in the Basin by 2000 and for 2010.

In contrast, SCE's approach for attainment of the NAAQS for PM10 in the Basin is technically deficient and does not follow EPA policy and guideline requirements. Any PM10 SIP submittal based along the lines of the SCE proposal would likely meet with EPA disapproval. Specifically, EPA agrees (Howekamp, 1988) with the District staff and disagrees with SCE on the following key issues: (1) EPA regulations and PM10 SIP Development Guidelines dictate the use of Rubidoux as the design site, (2) the highest value recorded at Rubidoux should be used as the design value, and (3) the PM10 episode observed on October 29, 1986 does not meet the criteria of exceptional events and should be included in the control strategy analysis.

PM10 measurements taken since the 1988 AQMP Revision analysis support the District's selection of design value for the 24-hour PM10 standard. The peak 24-hour average PM10 concentration recorded in the Basin during January through October, 1988 was $289 \mu\text{g}/\text{m}^3$, recorded at San Bernardino on October 24, 1988. Sulfates (adjusted for cations) accounted for $21 \mu\text{g}/\text{m}^3$ (7 percent of PM10 mass) and nitrates (adjusted for cations) accounted for $100 \mu\text{g}/\text{m}^3$ (35 percent). On the same day, Fontana recorded a PM10 concentration of $287 \mu\text{g}/\text{m}^3$ and Rubidoux recorded a PM10 concentration of $252 \mu\text{g}/\text{m}^3$. The meteorology on that day was characterized by a strong elevated inversion and a stagnant wind field (there were two first stage ozone alerts). This is further evidence that it is quite reasonable to construct a design value for the 24-hour federal standard based on a 24-hour average PM10 measurement of $294 \mu\text{g}/\text{m}^3$ (before adjustment for nitrate decay), which was observed at Rubidoux on October 29, 1986.

The WSPA plan does not specifically address PM10 abatement. However, the level of emissions control associated with the WSPA and SCE plans have been evaluated using District modeling results. Both the WSPA and SCE plans are projected to

produce air quality which will not meet either the federal 24-hour or annual average PM10 standard in the Basin by 2010.

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OVERVIEW

This section addresses the potential impacts of nitrogen oxides (NO_x) emission controls on ozone air quality in the South Coast Air Basin (Basin) by examining the results of model simulation projections and historical air quality data statistical analysis. The modeling results indicate that the 1988 AQMP Revision will meet the federal ozone standard, but alternative proposals by SCE and WSPA will not meet the standard. Any potential shortfalls of reactive organic gas (ROG) controls or underestimation of baseline ROG emissions will cause peak ozone concentrations to stay at a much higher level under the alternative proposals than that for the 1988 AQMP Revision. Also, historical air quality and emission trend data suggested that a control program involving concurrent control on ROG and NO_x emissions was effective in reducing the peak ozone concentrations in the Basin.

PHOTOCHEMICAL MODELING

The 1988 AQMP Revision process provides the most comprehensive assessment of the effects of NO_x and ROG emissions on the Basin's ozone air quality ever conducted. For the AQMP, the Urban Airshed Model (UAM) was selected as the most appropriate model for assessing impacts on the Basin's ozone air quality. Unfortunately, data shortfalls allow only one type of meteorology to be evaluated at this time. Appendix V-Q of the AQMP describes the modeling protocol which was followed for analyses of NO_x and ROG control strategies effects on ozone concentrations. The protocol was developed with assistance from other government agencies, industry, (including SCE and WSPA) and academics. It also presents the rationale and methodology used in selecting the 5-7 June 1985 ozone episode for the ozone simulations, and specifies data input procedures and statistical model performance goals.

Appendix V-R of the 1988 AQMP Revision presents the UAM performance evaluation for the 5-7 June, 1985 ozone episode. This includes a description of UAM, a characterization of the ozone episode over the modeling domain, and the air quality, meteorological and emission inputs utilized. Appendix V-S of the AQMP provides tables and figures which summarize projections of baseline emissions and air quality for the year 2010 and the effects of various control options.

The District staff constructed five modeling scenarios to test the potential air quality impacts of the alternative control strategies proposed by SCE and WSPA: (1) a "ROG-only" control strategy using all AQMP Tier I and Tier II ROG-only control measures, (2) the "SCE Alternative" control scenario using District staff's estimation of the reduction potential, (3) a "SCE Realistic Alternative" control scenario based on the "SCE Alternative" and including additional control measures already adopted by the ARB and SCAG, (4) the "WSPA Alternative" control scenario using District staff's estimation of the reduction potential, and (5) a "WSPA Realistic Alternative" control scenario based on the "WSPA Alternative" but only including the ARB control measures which ARB staff consider feasible. Table III-1 presents emission estimates for the 2010 base year, for the AQMP Tier III control strategy scenario and for each of the scenarios described above. The Table also gives the basinwide peak ozone concentration predicted by the UAM for each of these scenarios.

MODELING RESULTS OF CONTROL SCENARIOS

Table III-1 shows that the ROG-only scenario significantly reduces the Basin peak ozone concentration to below 20 pphm. The SCE and WSPA approaches (adjusted and unadjusted) result in ozone concentrations between 13.2 and 15.6 pphm. In addition, the federal ozone NAAQS of 12 pphm cannot be met with Tier I and Tier II controls alone and Tier III controls must therefore be used to meet (within the models level of sensitivity) the NAAQS for ozone.

Figures III-1 through III-8 show UAM Basin ozone estimations on a geographical basis for the modeling scenarios listed in Table III-1. Upon examining these Figures, the spatial pattern of ozone air quality suggest that the predominantly ROG reductions scenarios result in peak ozone concentrations above the Federal NAAQS in a larger geographic area shifted to the east. This is a direct result of less NO_x reductions.

Figure III-1 shows the projected air quality for the 2010 Baseline scenario representing no implementation of any proposed AQMP measures. Ozone concentrations exceed the NAAQS throughout the San Gabriel Valley and the eastern portions of the Basin.

TABLE III-1
Summary of Emissions and Model-Predicted Peak Ozone Concentrations
for Alternative Control Scenarios

| Scenario | Episodic - Specific Emissions ^a (tons/day) | | | | Basin Peak Ozone Concentration (pphm) ^b |
|------------------------------|--|----------------|-----------------|----------------|---|
| | ROG | % Reduction | NO _x | % Reduction | |
| 2010 Baseline | 1297 | - | 1130 | - | 29.8 |
| ROG-Only | 697 | 46.3 | 1126 | 0.4 | 18.5 |
| SCE Alternative | 497 | 61.7 | 860 | 23.9 | 13.7 |
| SCE Realistic Alternative | 476 | 63.3 | 692 | 38.8 | 15.6 |
| WSPA Alternative | 337 | 74.0 | 741 | 34.4 | 13.2 |
| WSPA Realistic Alternative | 443 | 65.8 | 716 | 36.6 | 14.9 |
| 2010 with Tier I & Tier II | 423 | 67.4 | 335 | 70.4 | 16.6 |
| 2010 with Tiers I, II, & III | 212 | 83.7 | 209 | 81.5 | 12.6 |

a. Modeling region total emissions on the first day of the 3 day episode simulated.

b. parts per hundred million (pphm)

Figure III-2 shows the projected ozone air quality for the ROG-Only control scenario for the year 2010. Ozone concentrations exceed the NAAQS primarily in San Bernardino and Riverside Counties with the peak concentration exceeding 18 pphm in Riverside County.

Figure III-3 shows the projected ozone air quality for the SCE Alternative scenario which includes mainly ROG measures and some high ROG/NO_x measures. The additional ROG reductions over the ROG only scenario result in lower peak ozone concentrations but the ozone level exceeds the NAAQS in parts of San Bernardino and Riverside Counties.

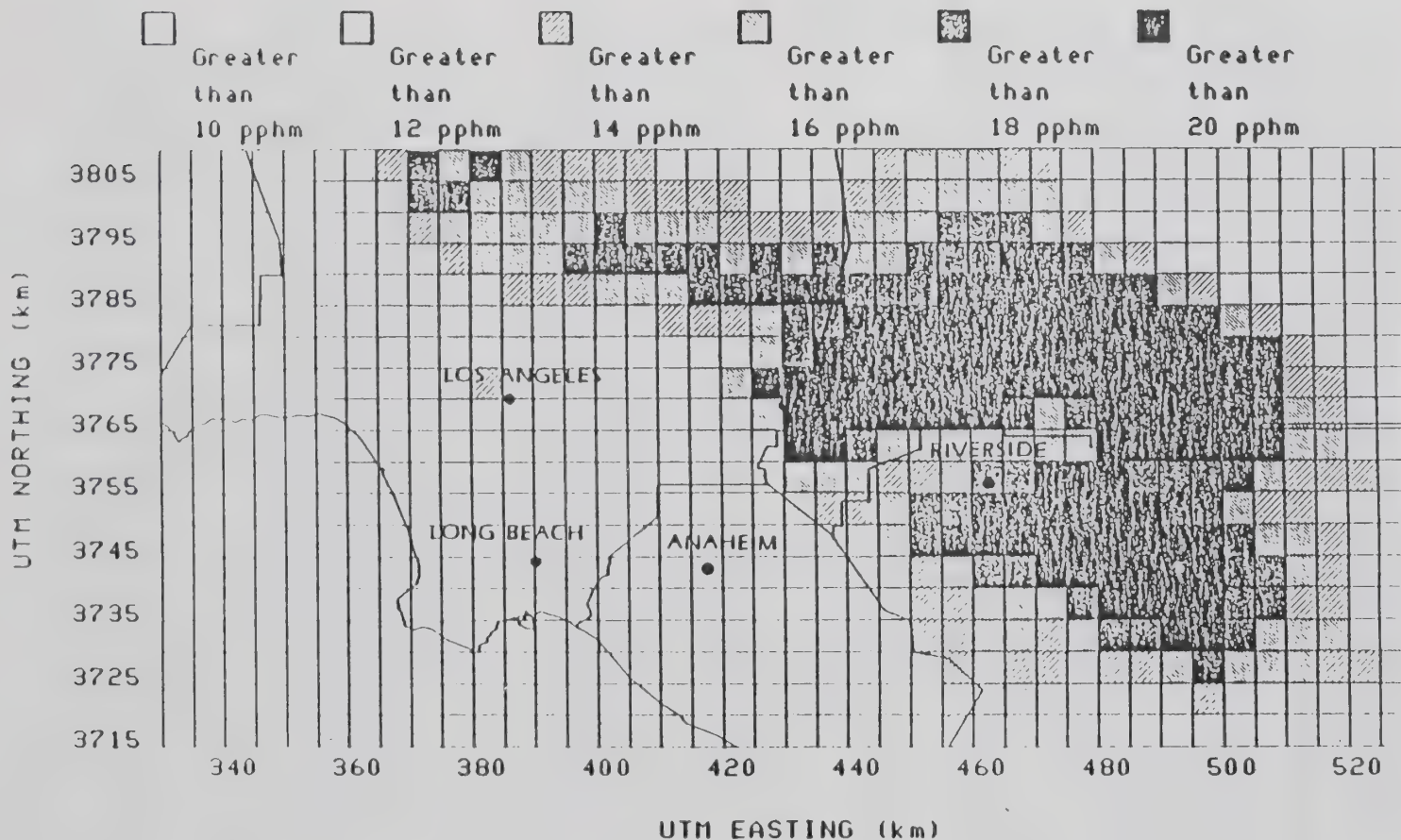


FIGURE III-1
Model-Predicted Maximum Hourly Ozone Concentrations
in the South Coast Air Basin
Projected for 2010 Baseline

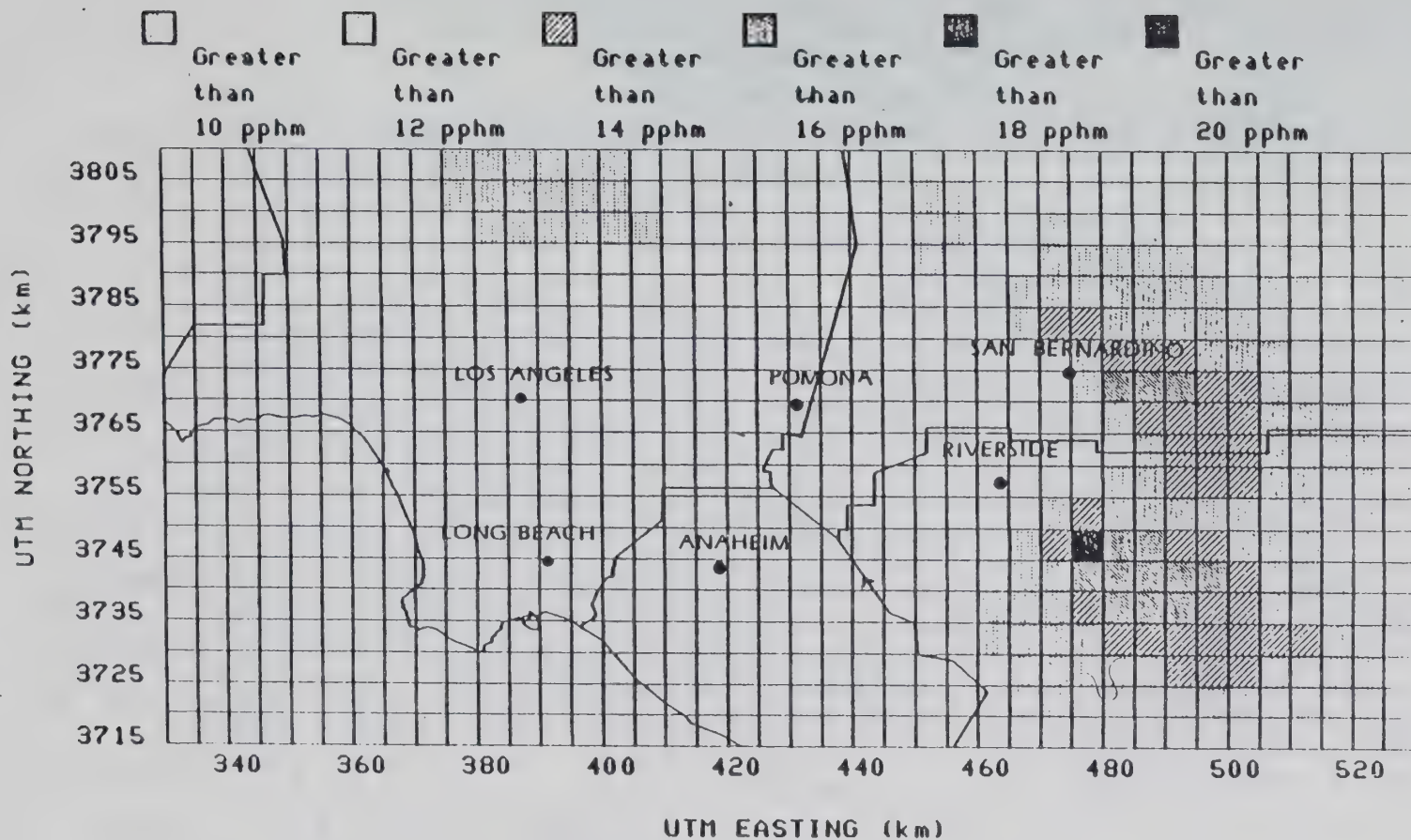


FIGURE III-2

Model-Predicted Maximum Hourly Ozone Concentrations
in the South Coast Air Basin
for ROG-Only Control Scenario

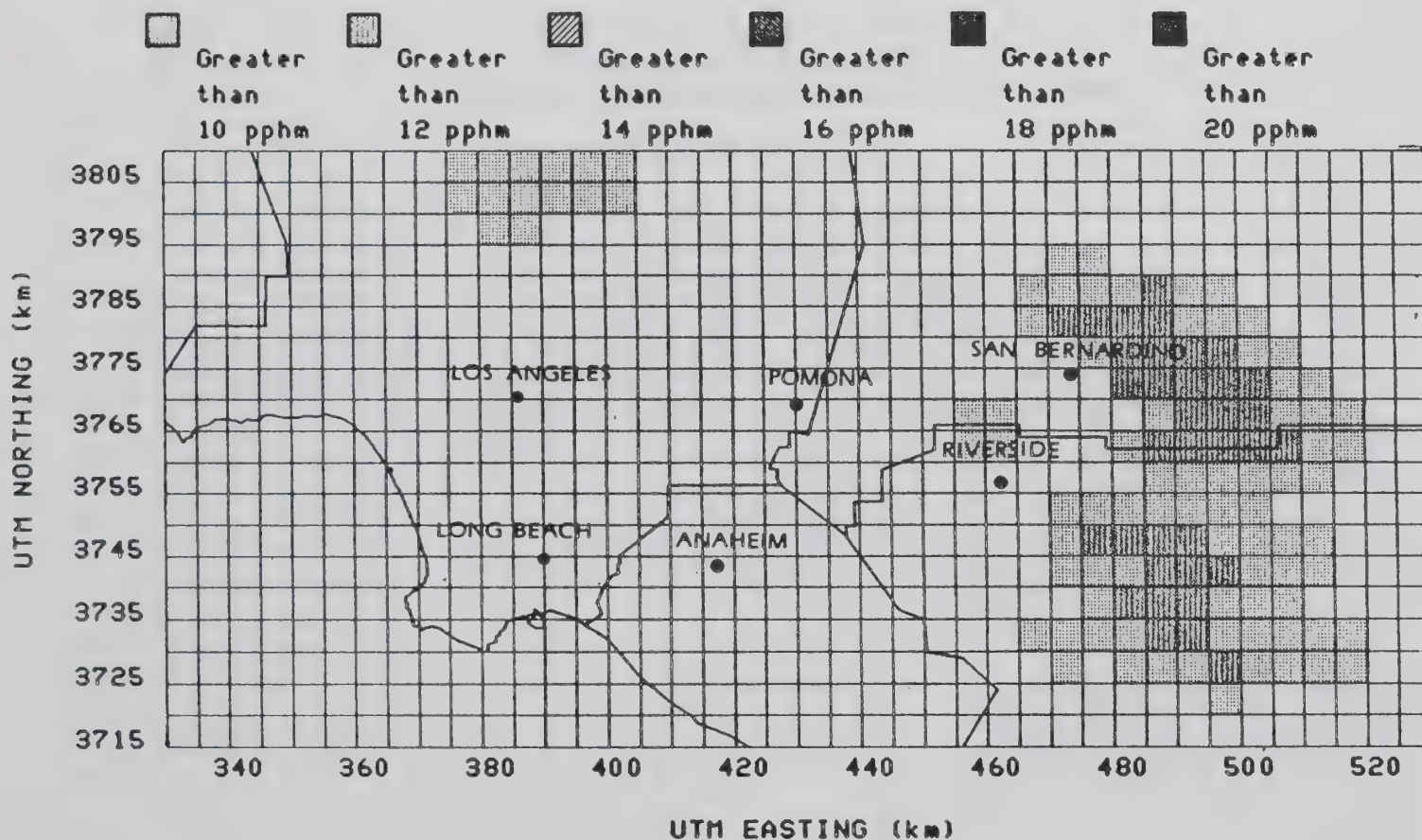


FIGURE III-3

Model-Predicted Changes in Maximum Hourly Ozone Concentrations
in the South Coast Air Basin
for SCE Alternative Control Scenario

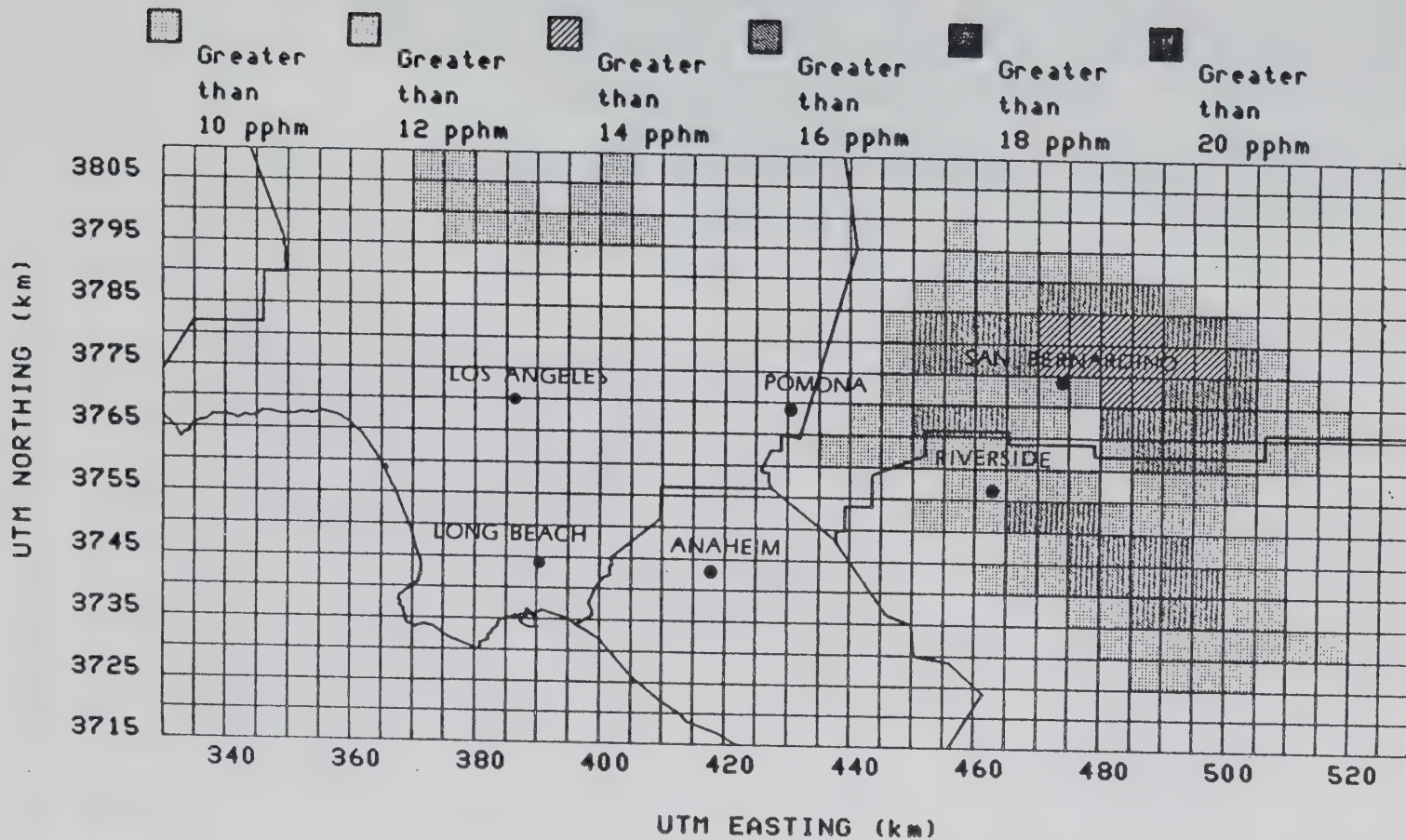


FIGURE III-4
 Model-Predicted Maximum Hourly Ozone Concentrations
 in the South Coast Air Basin
 for SCE Realistic Alternative Control Scenario

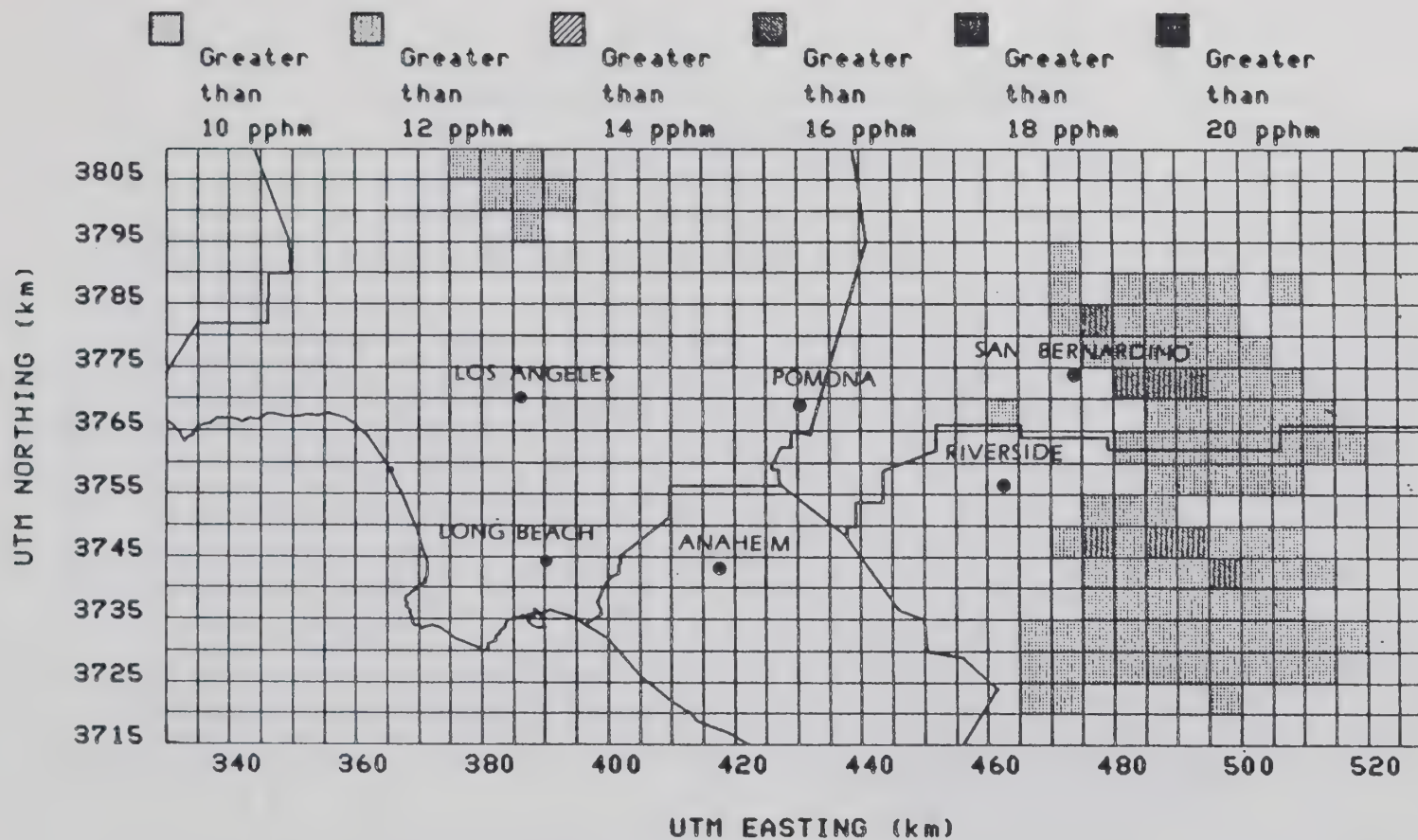


FIGURE III-5

Model-Predicted Maximum Hourly Ozone Concentrations
in the South Coast Air Basin
for WSPA Alternative Control Scenario

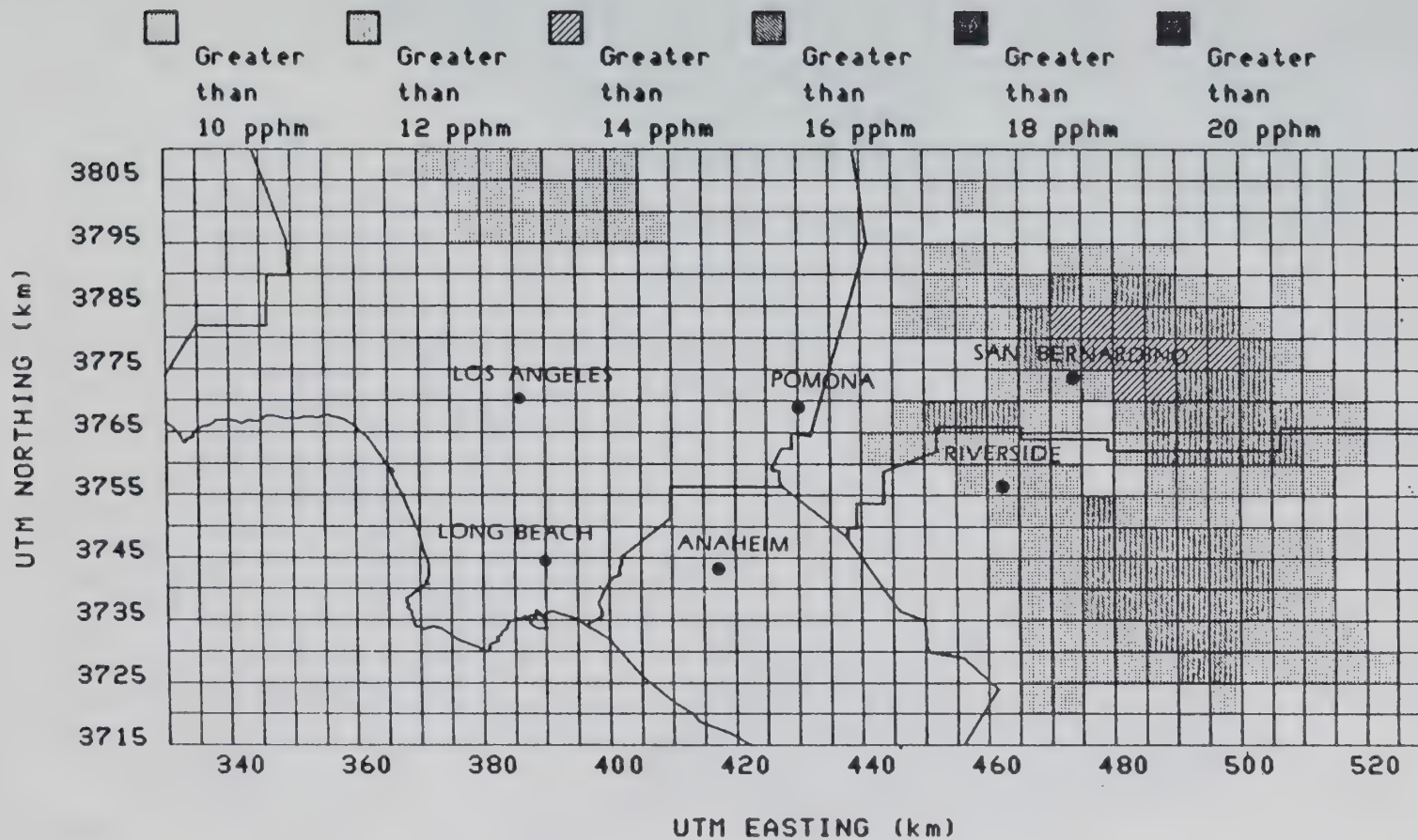


FIGURE III-6

Model-Predicted Maximum Hourly Ozone Concentrations
in the South Coast Air Basin
for WSPA Realistic Alternative Control Scenario

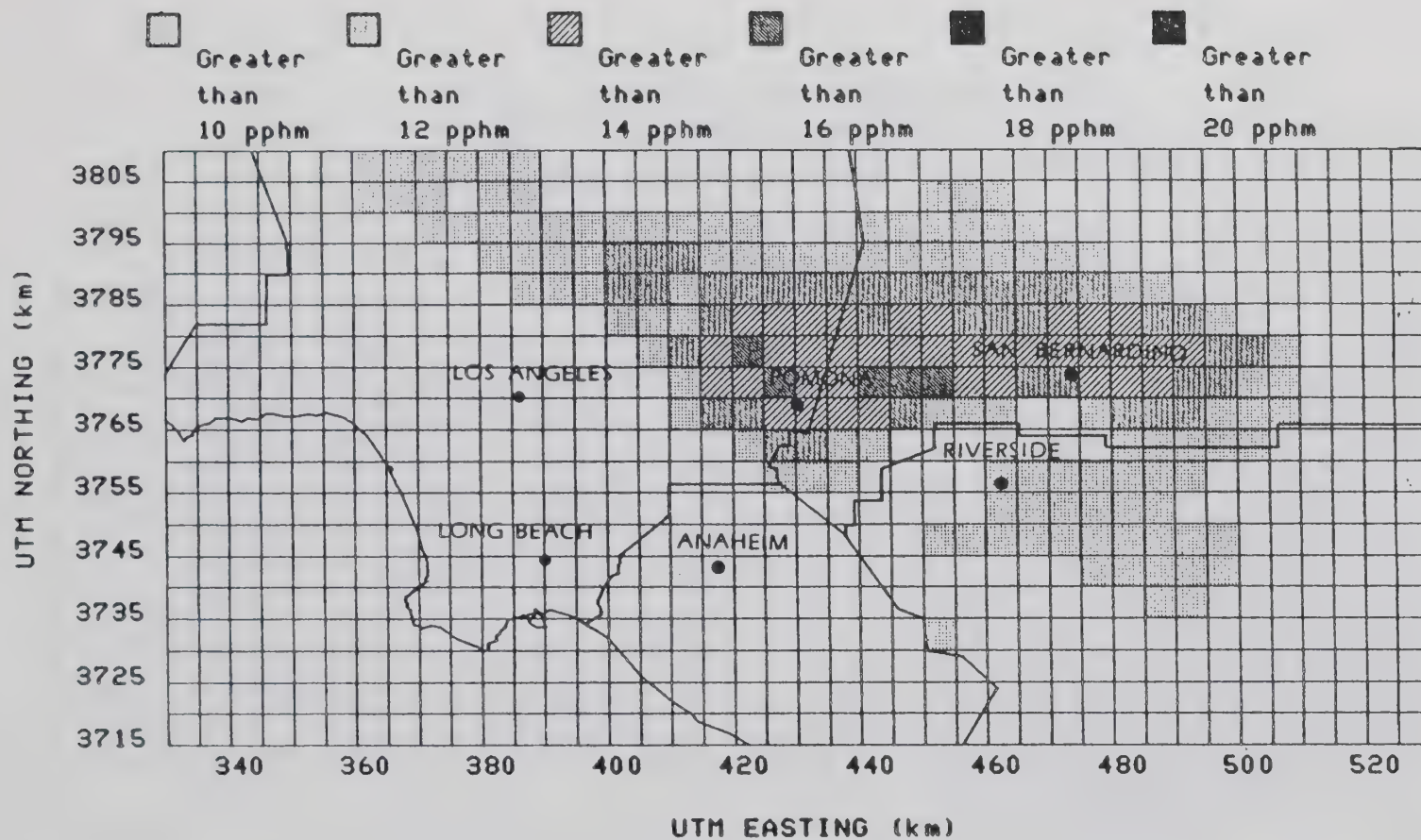


FIGURE III-7

Model-Predicted Maximum Hourly Ozone Concentrations
in the South Coast Air Basin
for 2010 With Tier I & Tier II

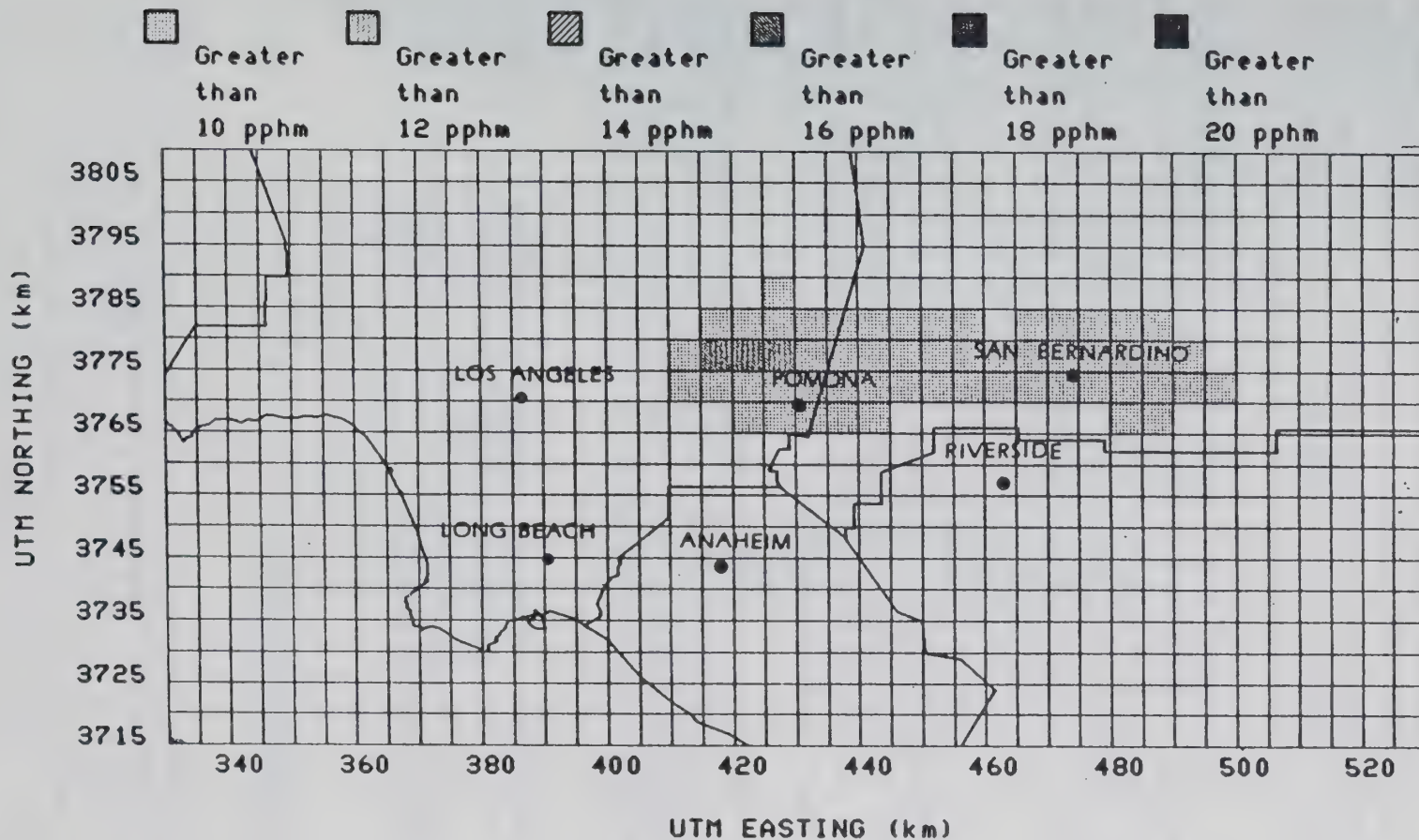


FIGURE III-8

Model-Predicted Maximum Hourly Ozone Concentrations
in the South Coast Air Basin
for 2010 With Tier I, II & III

Figure III-4 shows the projected ozone air quality for the SCE Realistic Alternative scenario which is based on the SCE Alternative and including additional ARB and SCAG control measures which have already been adopted. The additional control measures result in a little more ROG reduction but significantly more NO_x reduction which produces peak ozone concentrations exceeding 15 pphm.

Figure III-5 shows the projected ozone air quality for the WSPA Alternative scenario, which like the SCE Alternative, includes mainly ROG measures and some high ROG/NO_x measures. The resulting ozone air quality is similar to the SCE Alternative shown in Figure III-3; the NAAQS is exceeded in parts of San Bernardino and Riverside Counties. Peak ozone concentrations are lower than the SCE Alternative because of the larger ROG reduction.

Figure III-6 shows the projected ozone air quality for the WSPA Realistic Alternative scenario which is based on the WSPA Alternative but only includes the ARB control measures which ARB staff consider feasible. Without as much ROG reduction, peak ozone concentrations are higher than the WSPA Alternative and violations of the NAAQS are more widespread.

Figure III-7 shows the projected ozone air quality for the 2010 with Tier I and Tier 2 scenario. Although the ROG reductions are comparable to the SCE and WSPA alternatives, the additional significant NO_x reductions result in peak ozone concentrations exceeding 16 pphm in the eastern San Gabriel Valley and western San Bernardino County.

Figure III-8 shows the projected ozone air quality for the 2010 with Tier I, Tier II, and Tier III control scenario. The ozone NAAQS is met everywhere except the eastern portion of the San Gabriel Valley; there it is only exceeded by 0.6 pphm which is within the model's limit of detection.

METEOROLOGICAL CONSIDERATIONS

Control strategies consisting of mainly ROG control measures (e.g., the SCE and WSPA approaches) may result in higher ozone concentrations under a less stable meteorology than modeled. Ozone increases can be caused by enhancement of upper air influence and less scavenging of ozone by the resulting lower NO levels. For example, a model sensitivity analysis was conducted using the SCE Alternative scenario but reducing the temperature gradient within the elevated stable layer by up to one-third (not a large reduction in stability). Figure III-9

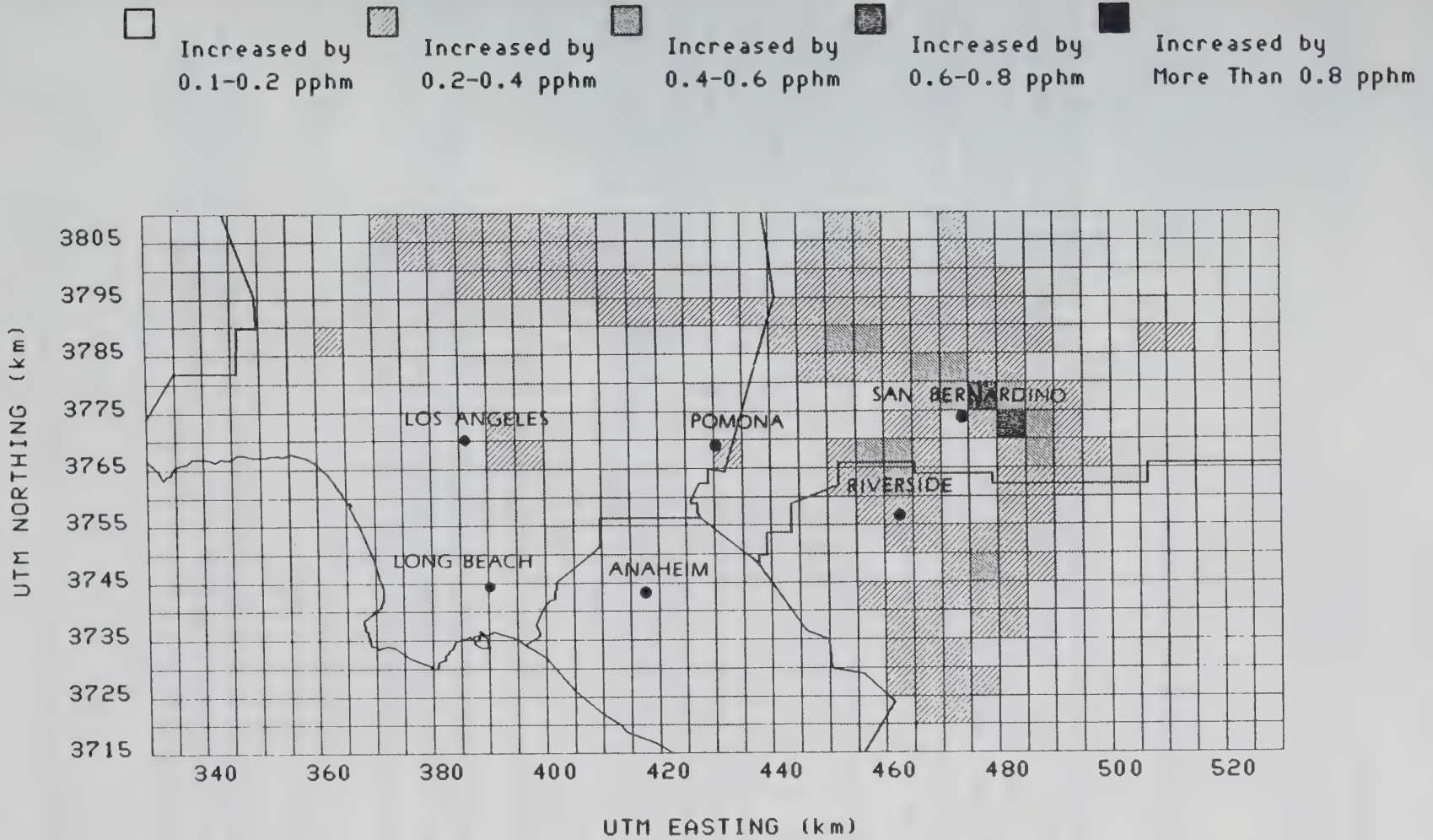


FIGURE III-9

Differences in Maximum Ozone Concentrations
from the SCE Alternative Scenario
Resulting from Less Stable Meteorology

shows the difference in ozone concentrations on a geographical basis for the hour of peak ozone concentration. This figure shows up to 1 pphm ozone increase in San Bernardino County resulting from the less stable meteorology.

ROBUSTNESS OF CONTROL SCENARIOS

A large number of UAM modeling simulations have been conducted using the June 5-7, 1985 episode along with the across-the-board basinwide reduction of the 2010 baseline ROG and NO_x emissions. Figure III-10 shows the basinwide maximum ozone concentration isopleths¹ based on the results of these simulations. The approximate positions corresponding to the 1988 AQMP Revision and the SCE/WSPA control strategy are also shown on the figure.

These isopleths can be used to illustrate a major concern associated with the control scenarios proposed by SCE and WSPA -- robustness. As indicated by the two arrows shown in Figure III-10, any shortfall of ROG emissions reduction or underestimation of baseline ROG emissions are likely to lead to much higher peak ozone concentrations for the SCE/WSPA control scenarios than for the 1988 AQMP Revision. For example, a 20 percent emission control shortfall in the SCE or WSPA alternatives would result in about a 4 pphm increase in peak ozone levels. A similar shortfall in the 1988 AQMP Revision would result in only a 2 pphm increase.

These shortfalls may occur for the following reasons:

Stationary sources of ROG emissions are often small but numerous in number. They are more difficult to identify and the control of them is more difficult to enforce than stationary sources of NO_x emissions.

There are natural sources of ROG emissions which are not accounted for in the baseline emissions inventory.

It is widely believed that there are significant evaporative and running loss emissions from mobile sources that are not accounted for in the baseline emissions inventory.

¹ Isopleths refer to lines of constant ozone concentrations for varying ROG and NO_x emissions.

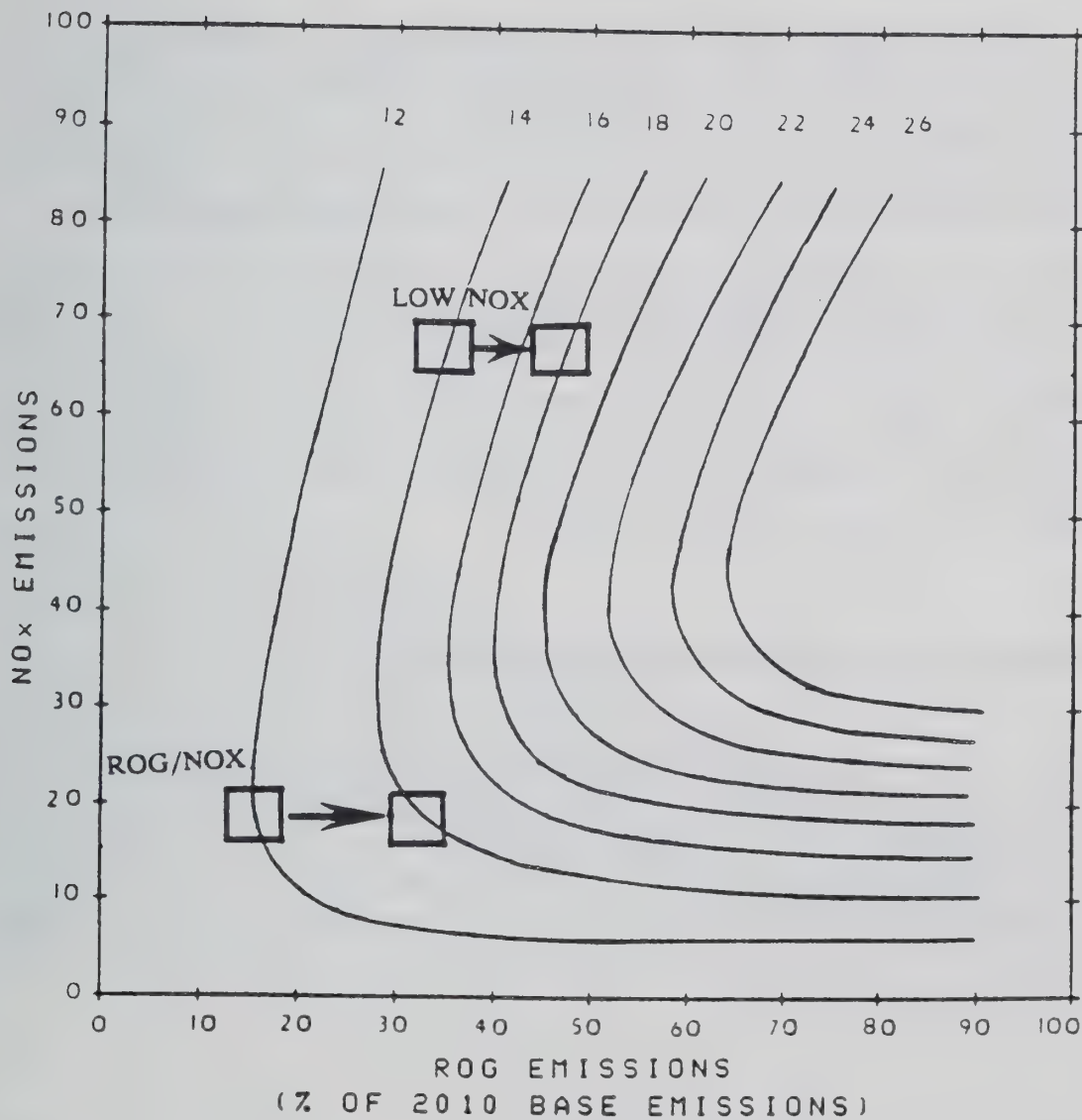


FIGURE III-10
 UAM Predicted Ozone Isopleth
 (Basinwide Peak Ozone Concentration)

STATISTICAL ANALYSIS OF AIR QUALITY DATA

Statistical analyses of actual air quality data and associated emissions yields valuable insights into the efficacy of an air pollution control program. The South Coast Air Quality Management District possesses an excellent air quality data base for the period since the mid-1970s. The Air Resources Board has also estimated annual emissions of ROG and NO_x in the Basin for the period since the mid-1970s.

Meteorology is an important consideration in the review of actual air quality data. Aside from changes in emissions, air quality may be better or worse from year to year depending upon the amount of atmospheric ventilation and sunshine experienced during a given year or smog season. One way of minimizing the meteorological bias in air quality trends is to present data in the form of three year running means. When this is done, particularly over periods of ten years or greater, reasonable trends can usually be elucidated.

Trends in Basin Emissions of ROG and NO_x

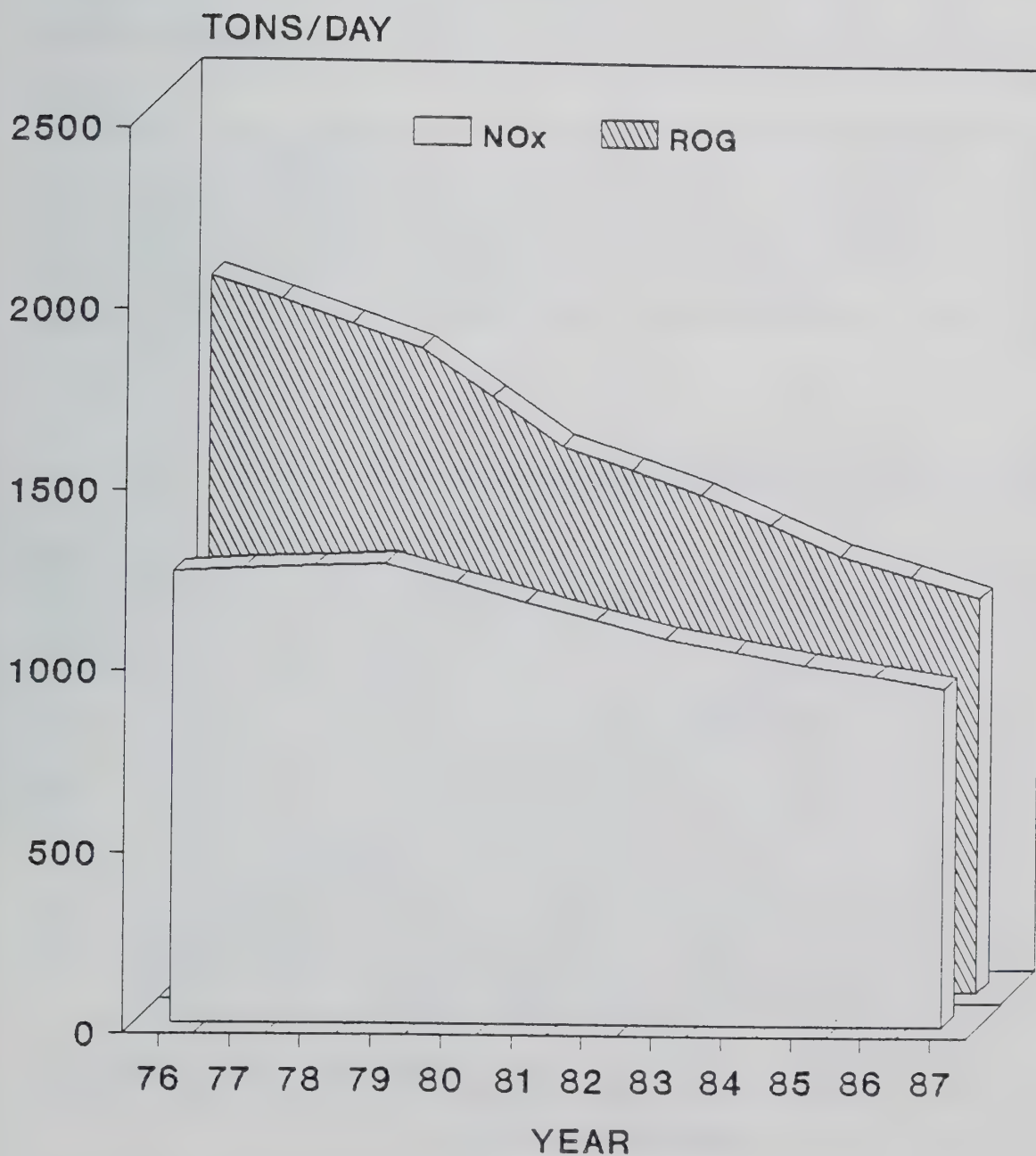
Figure III-11 shows the trend in Basin emissions of ROG and NO_x in average tons per day from 1976-1987. From 1976 onward there has been a larger steady decline in ROG emissions, with a 44 percent reduction over the period 1976-1987 (from 1968 to 1095 tons per day). The pattern for NO_x emissions is different. From 1976 to 1979 NO_x emissions increased by two percent, before beginning a steady decline through 1987. Over the period 1976-1987 NO_x emissions declined by 25 percent (from 1244 to 938 tons per day).

Trends in Basin Ozone Air Quality

For ease of calculation and conciseness of presentation, many trend studies of ozone tend to focus on the high hour of the day at the most severely impacted air monitoring stations. While this approach is useful it does not include information on ozone at other air monitoring stations or during periods of the day other than the maximum hour. To deal with these limitations the District has developed statistics on the total number of hours exceeding the federal standard (12 pphm one-hour average) or reaching Stage I Episode levels (20 pphm one-hour average) at 18 key

Figure III-11

Basin Emissions of ROG and NOx
1976-1987, Tons Per Day



trend stations. The station-hours statistics are presented in the form of three year running means to minimize the meteorological bias on the ozone trends, as alluded to earlier.

Figure III-12 shows trends of three year running means of station-hours exceeding the federal ozone standard. The pattern shows an increase from 1976-78 to 1978-80 with almost continuous improvement thereafter through 1985-87. From 1976-78 to 1985-87 there was a 33 percent decrease in station-hours exceeding the federal standard (from 6905 to 4658 hours).

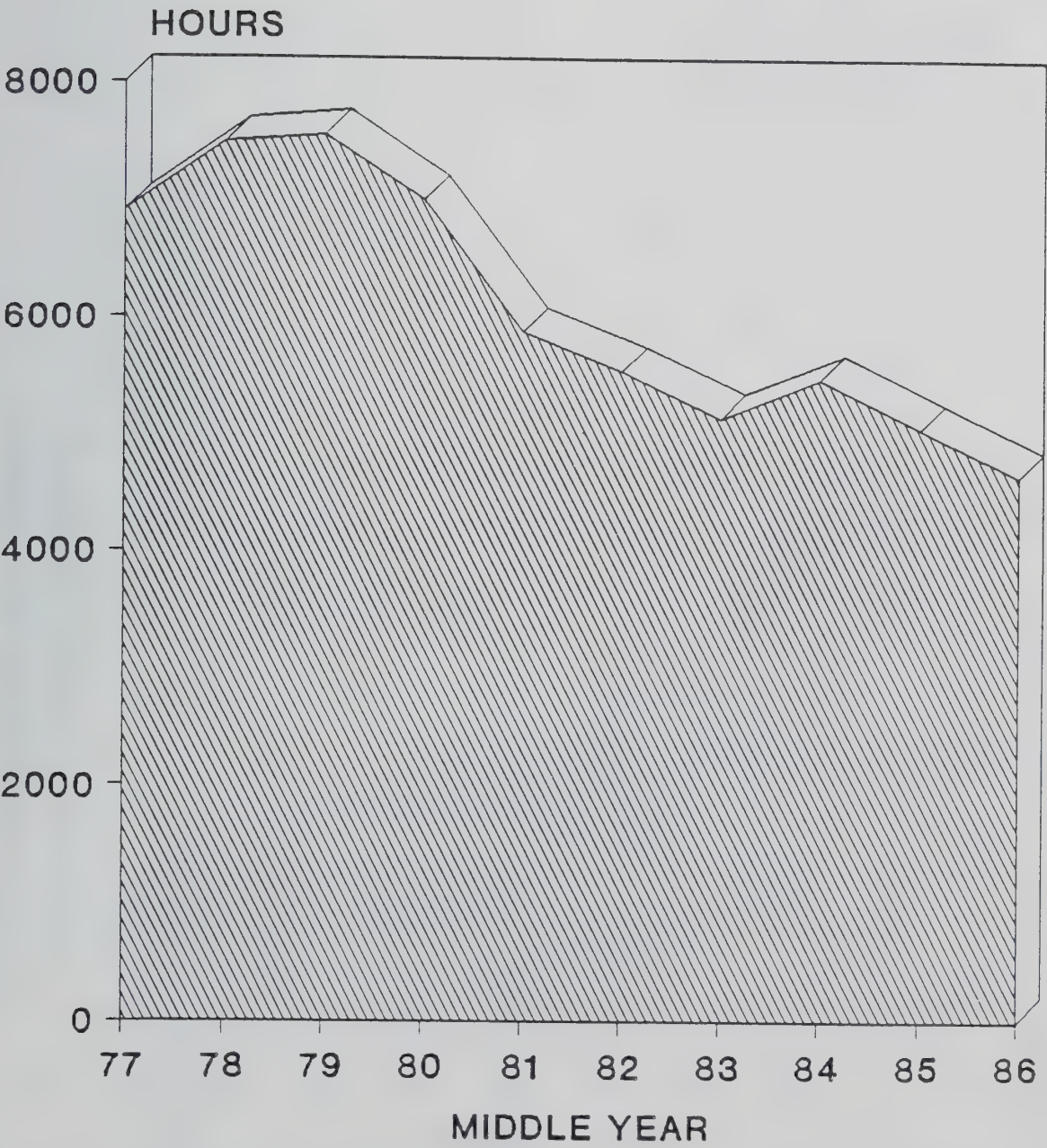
Even greater improvement in ozone air quality is shown with regard to exposure to higher concentrations. Figure III-13 shows trends of three year running means of station-hours equalling or exceeding the Stage I Episode level. The pattern shows an increase from 1976-78 to 1978-80 with virtually continuous strong improvement through 1985-87. From 1976-78 through 1985-87 there was a 66 percent decline in the number of station-hours at or above the Stage I Episode level (from 1769 to 595).

Air Quality Data Supports NO_x Control

A good overall view of air quality versus emission changes can be obtained if all data are presented on the same basis for similar time frames. Figure III-14 shows percent change in emissions and air quality for three year averaging periods, compared to the base period of 1976-78. The data clearly show that from 1976-78 through 1978-80 when ROG emissions were reduced and NO_x emissions showed little change, ozone air quality showed no improvement. In fact, ozone levels increased. In contrast to this, from 1978-80 through 1985-87 ROG and NO_x emissions were concurrently reduced and this resulted in a dramatic 71 percent reduction in station-hours at or above the Stage I Episode level from the peak in 1978-80 through 1985-87 and a 66 percent overall reduction from 1976-78 through 1985-87. The same pattern held true for station-hours exceeding the federal ozone standard with a reduction of 38 percent from the peak in 1978-80 to 1985-87 and an overall reduction of 33 percent from 1976-78 to 1985-87.

At the same time NO₂ concentrations based on an average of the five highest sites declined by 16 percent from 1976-78 to 1985-87, fairly close to the 22 percent reduction in NO_x emissions experienced over that period.

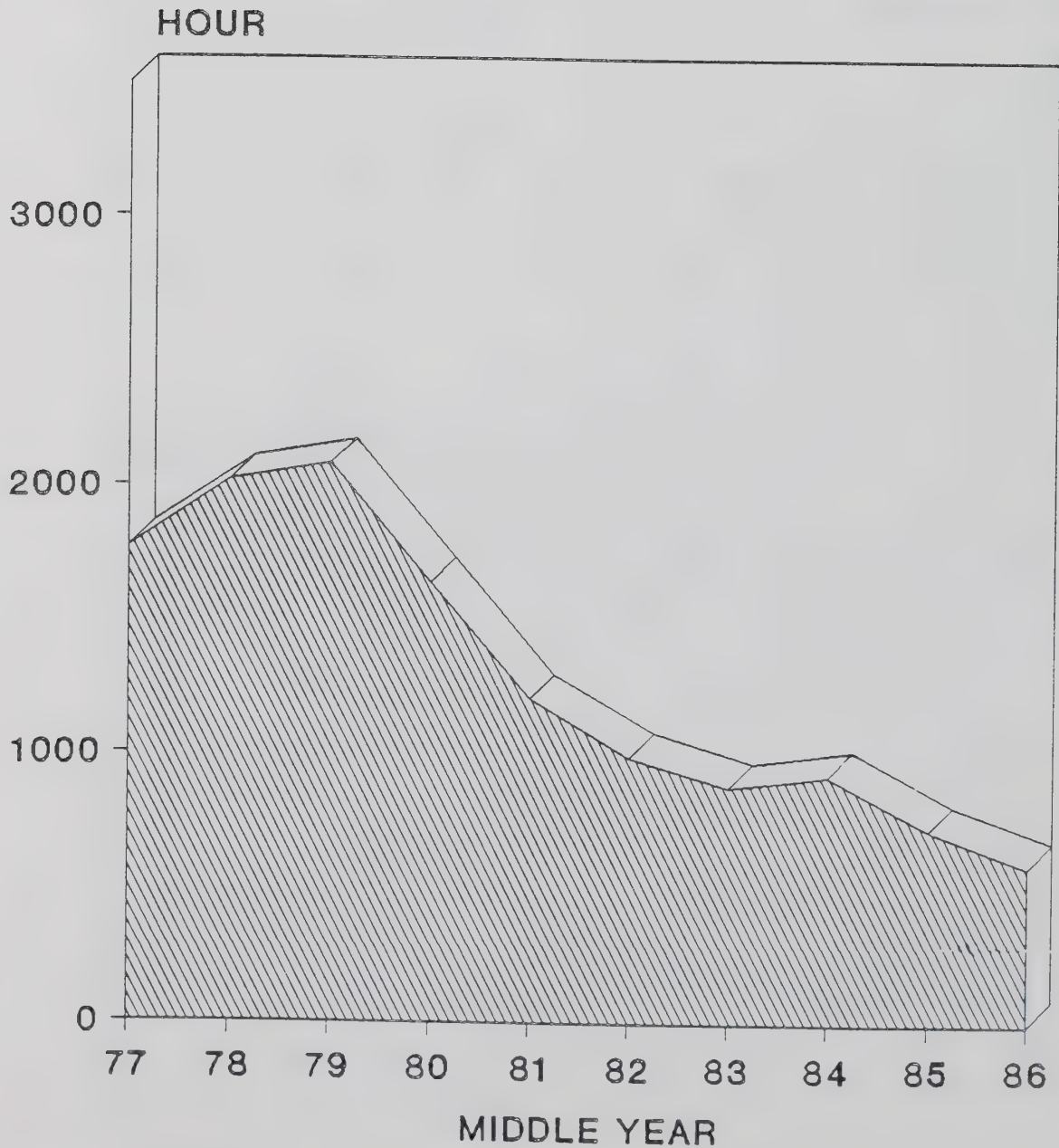
Figure III-12
Ozone
Station-Hours > Federal Standard
3-Year Running Mean, 1976-1987*



* Based on 18 trend stations.

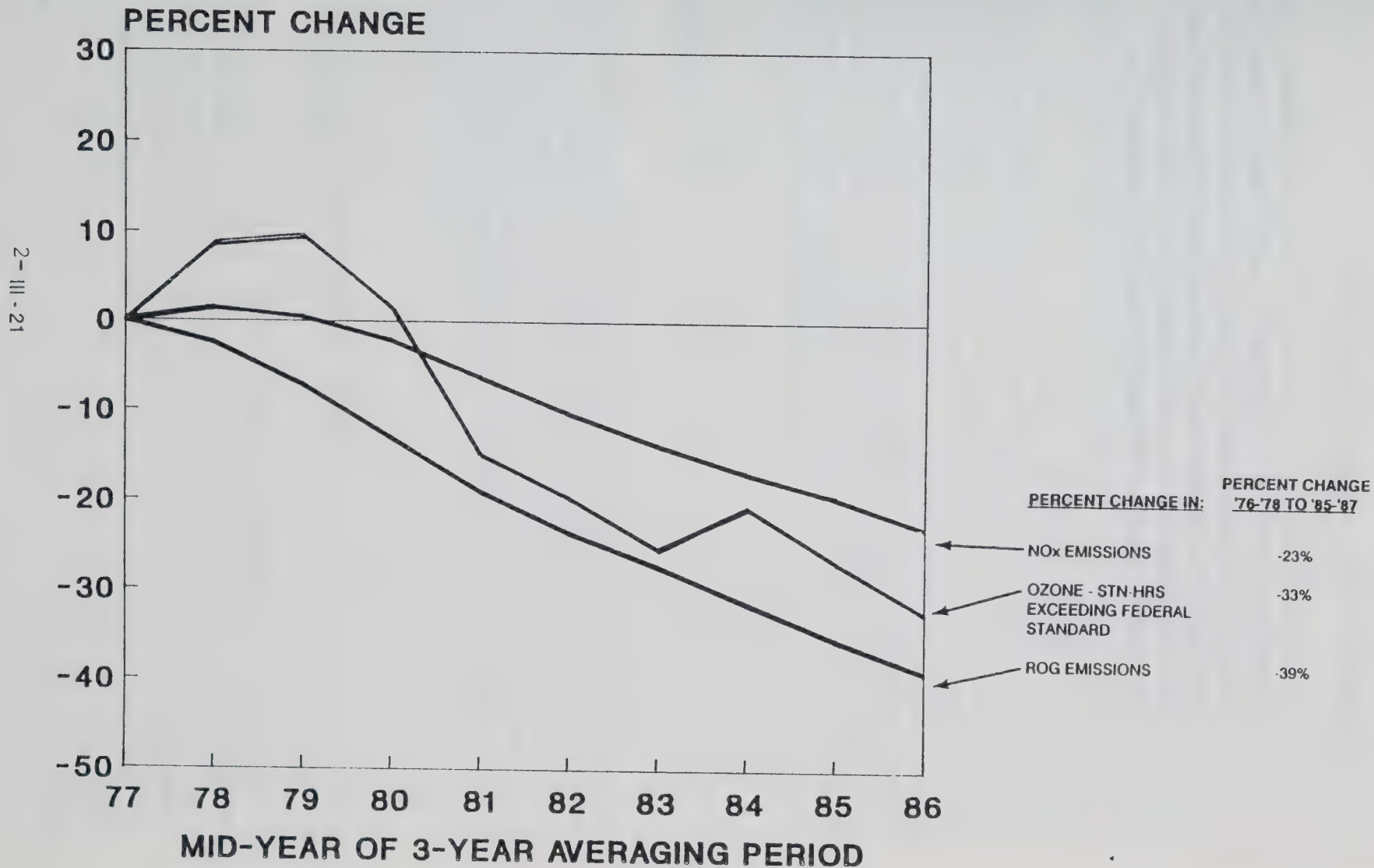
Figure III-13

Ozone
Station-Hours > Stage I Episode
3-Year Running Mean, 1976-1987*



* Based on 18 trend stations.

Percent Change in 3-Year Average of Emissions and Air Quality Compared to 1976-1978



•AZUSA,BURBANK,PICO RIVERA,POMONA,
DOWNTOWN L.A.

The results of the statistical analysis indicate that:

Concurrent reductions in Basin ROG and NO_x emissions since the late 1970's have resulted in substantial improvement in ozone and NO₂ air quality. The improvement in ozone concentrations is especially evident in the number of station-hours reaching Stage I Episode levels, which has shown a dramatic 71 percent decline from 1978-80 to 1985-87, a period of concurrent reduction of Basin ROG and NO_x emissions.

OVERVIEW

Fine particulate air pollutants are the primary cause of visibility degradation in the South Coast Air Basin (Basin). The California visibility standard is currently violated, often on days when the ozone standard is met. The control of coarse particles, while reducing overall concentrations of PM10, will have little effect on visibility.

A light extinction budget has been constructed which identifies the particulate components responsible for visibility impairment in the Basin. The impacts of various control strategy options on future visual range have been projected using a modified regression equation developed by Davidson (1983). It has been estimated that the alternative control strategies proposed by SCE and WSPA will not achieve the State visibility standard. The District's Tier II scenario will be close to compliance and Tier III will meet the standard. The District's Tier III scenario results in estimated visual ranges three times greater than the SCE/WSPA alternatives. Impacts on areas outside the Basin due to long-range transport are discussed.

INTRODUCTION

One of the most apparent indications of air pollution in the Basin is reduced visibility. In addition to health concerns associated with exposure to air pollutants, there are also significant negative aesthetic effects. Fine particles, smaller than about 2.5 microns in diameter, are able to penetrate deeply into the human respiratory system. The presence of these fine particles is also the primary cause of reduced visibility in the Basin.

Visibility in the South Coast Air Basin

The state of California has recognized visibility degradation as an air pollution problem and has an air quality standard for visible range. The visibility standard requires the visible range to equal or exceed 10 miles when the relative humidity is less than 70 percent. At many locations in the Basin the state standard is violated between about 200 and 250 days per year. Ontario Airport reported 234 and 255

days not meeting the standard in 1985 and 1986, respectively, and Burbank Airport observed 242 days not meeting the standard during 1987.

Visibility Expressed as Extinction Coefficient

The fraction of light attenuated per unit distance of travel through an air mass is known as the extinction coefficient (B_{ext}), which for a homogeneous atmosphere can be expressed by the Koschmieder formula:

$$B_{\text{ext}} = K/V$$

where B_{ext} = extinction coefficient, in meters,

V = the prevailing visibility, in meters,

and $K = 3.9$ or 3.0 depending on whether one assumes that the human eye is capable of distinguishing a contrast level as low as 2 percent or 5 percent, respectively.

By analyzing the clarity of the atmosphere in terms of extinction coefficient rather than visible range, it is possible to break down the total atmospheric light extinction into four basic components:

1. Scattering of light by particles -- In the Basin this category is the main contributor to visibility degradation. Most of the light scattering is caused by particles less than 2.5 microns in diameter, particularly in the region around 0.5 microns. Such particles scatter light efficiently because they are close in size to the wavelength of visible light (about 0.4 to 0.7 microns).
2. Absorption of light by particles -- Studies have shown that light absorption by elemental carbon particles is responsible for a significant portion (between 15 and 24 percent) of the total light extinction in the Basin.

3. Absorption of light by gases -- Nitrogen dioxide is the only commonly occurring gas in the atmosphere of the Basin that is a strong absorber of light, although it does not occur in high enough concentrations to be more than a relatively small contributor to the total extinction coefficient. It is the nitrogen dioxide however, which gives the atmosphere of the Basin its characteristic reddish-brown color.
4. Rayleigh scattering -- This scattering of light by air molecules occurs even in the absence of polluted air. Its contribution to the total extinction coefficient in the Basin is minimal.

Particle Size Considerations

From the previous discussion of light extinction and the role of particulate matter in light scattering, it is apparent that the control of fine particle concentrations would have a greater impact on visibility than the control of coarse particles. In Section II, it was observed that PM₁₀ is made up of both fine (particle diameter less than about 2 microns) and coarse (2 to 10 microns) particles. Some sources of particulate air pollution contribute predominantly to the fine fraction (i.e. combustion), while other sources contribute to the coarse fraction (i.e. soil dust).

Sulfate and nitrate containing particles have been identified as the most important light scattering components in the Basin. Sulfate concentrations have been reduced drastically in recent years due to control of sulfur dioxide emissions in the Basin. A reduction of particulate nitrate concentrations will likewise occur if emissions of nitrogen oxides (NO_x) are further controlled. This will have a large effect on visibility, as will be shown below. Controls on sources of fugitive dust, while reducing overall PM₁₀ concentrations, will have little impact on visibility since the majority of these particles are in the coarse size range and hence do not scatter light efficiently.

VISIBILITY PROJECTIONS

Regression Model

A statistical relationship between extinction coefficient (B_{ext}) and particulate air quality can be constructed by use of the technique of multiple linear regression. An equation relating B_{ext} to concentrations of sulfate, nitrate, elemental carbon, and remaining particulate matter was developed at the District by Davidson (1983) using data from 1978 to 1981. The equation also includes the effect of relative humidity (only those daylight hours when the relative humidity is less than 70 percent were used in the regression analysis). This equation provides a basis for comparing the effects on visibility due to different particulate species. The results of that investigation have been applied herein to predict the visibility in 2010 under a variety of control scenarios.

The original equation was developed using 24-hour average total suspended particulate matter concentrations, and assumed a 5 percent contrast level in relating the daily average B_{ext} to visible range. In this application, a modified version of the regression equation was used, including adjustments to reflect particle size distributions of sulfate, nitrate, elemental carbon, and remaining particulate matter, so that PM10 data collected in 1986 could be utilized. This permits the PM10 projections which were presented in Section II to be evaluated with respect to the impacts on visible range in the Basin.

The regression model provides a rough estimate of B_{ext} , and hence visual range, given a set of particulate species concentrations. It is a more useful indicator, however, of the relative contributions of each particulate species to the overall light extinction budget.

Extinction Budget

Particulate air quality data collected in 1986 were used to estimate the total light extinction coefficient, B_{ext} , using the regression model. The regression model is linear which means that B_{ext} is estimated as the addition of four terms, each representing the contribution to light extinction due to a different species.

Figure IV-1 presents the extinction coefficient budget for 1986 annual average particulate matter concentrations. The annual average visible range is estimated to have been between 16 and 18 miles at all locations in the Basin. Nitrates were responsible for between 36 and 47 percent of the total light extinction in the Basin during 1986.

The regression equation was also used to estimate the light extinction on peak 24-hour PM10 events in the Basin, as shown in Figure IV-2. The daily average visibility is estimated to be near 4 miles at all locations except Burbank, where the visibility is estimated to be almost 6 miles. These estimates are approximate, especially considering the effect of relative humidities other than 50 percent on these particular days. However, the relative contributions are meaningful as they indicate which pollutant species are causing the visibility degradation. **Nitrates were responsible for 76 percent of the total light extinction at downtown Los Angeles on the peak 24-hour PM10 event in 1986.**

Extinction Coefficient Projections

The projections of future (2010) PM10 concentrations for various control scenarios were presented in Section II. Those air quality projections were applied to the regression model to estimate the total light extinction coefficient, B_{ext} .

Projections for future (2010) B_{ext} estimates for four control scenarios are exhibited along with the 1986 base case in Figure IV-3 for annual average and in Figure IV-4 for 24-hour peak PM10 event. The SCE strategy is predicted to reduce annual average B_{ext} 27 percent from 1986 levels at downtown Los Angeles, corresponding to an increase in visual range from about 16 miles to 22 miles. The WSPA control strategy is projected to attain similar improvements to visibility (26 percent reduction of B_{ext} at downtown Los Angeles corresponding to a visual range of 22 miles). The District's control strategies, which significantly reduce the contribution of nitrates due to stringent NO_x control, are expected to achieve a 68 percent reduction in annual average B_{ext} at downtown Los Angeles for Tier II controls, and a 79 percent reduction for Tier III controls. The resulting estimates of B_{ext} correspond to visual ranges of 49 miles for Tier II and 77 miles for Tier III.

The improvements in visibility during peak 24-hour PM10 events were estimated for each of these control scenarios, as shown in Figure IV-4. During the peak PM10 event at downtown Los Angeles, the alternative control strategies proposed by SCE

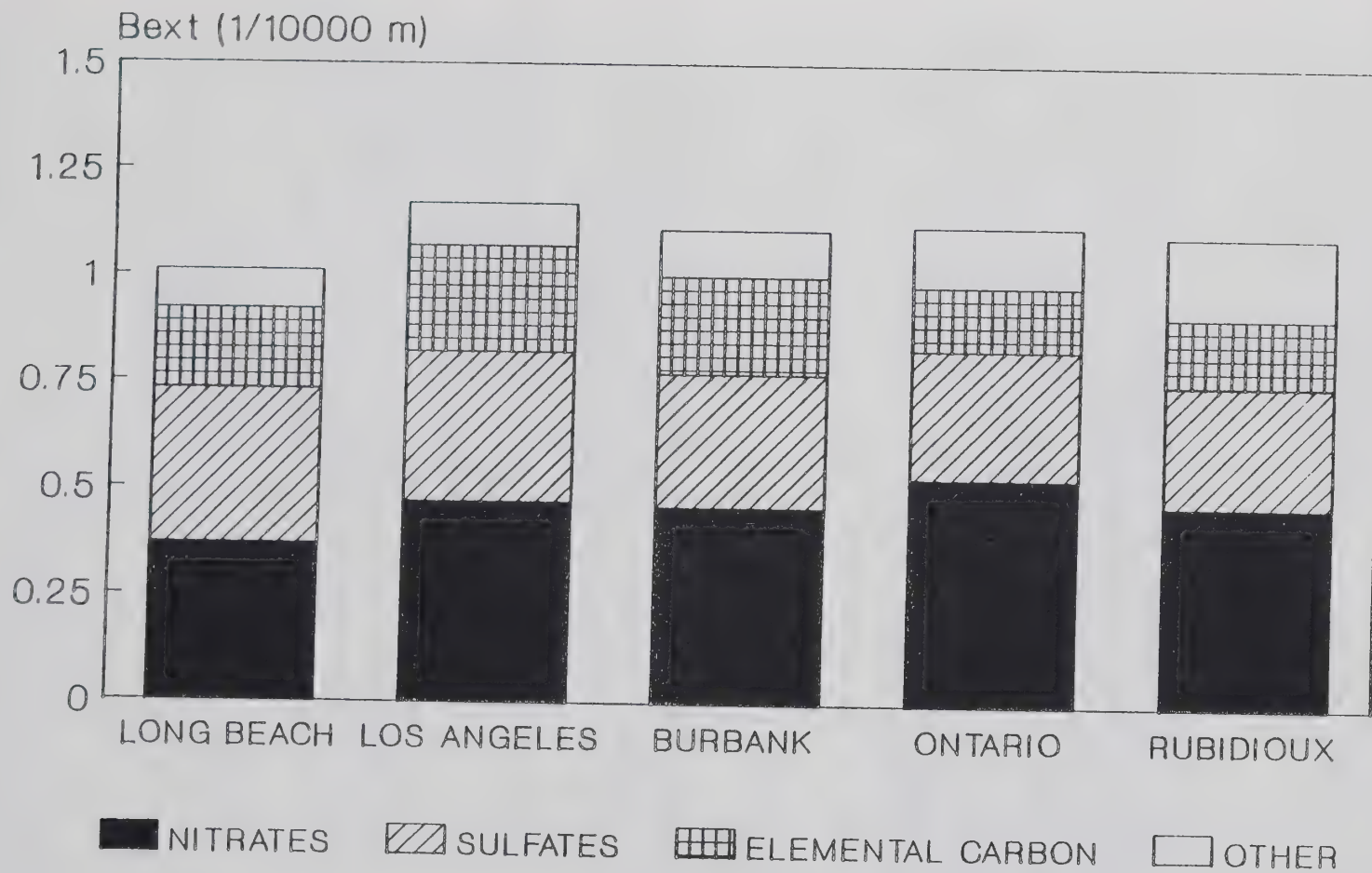


FIGURE IV-1
1986 annual average extinction coefficient budget

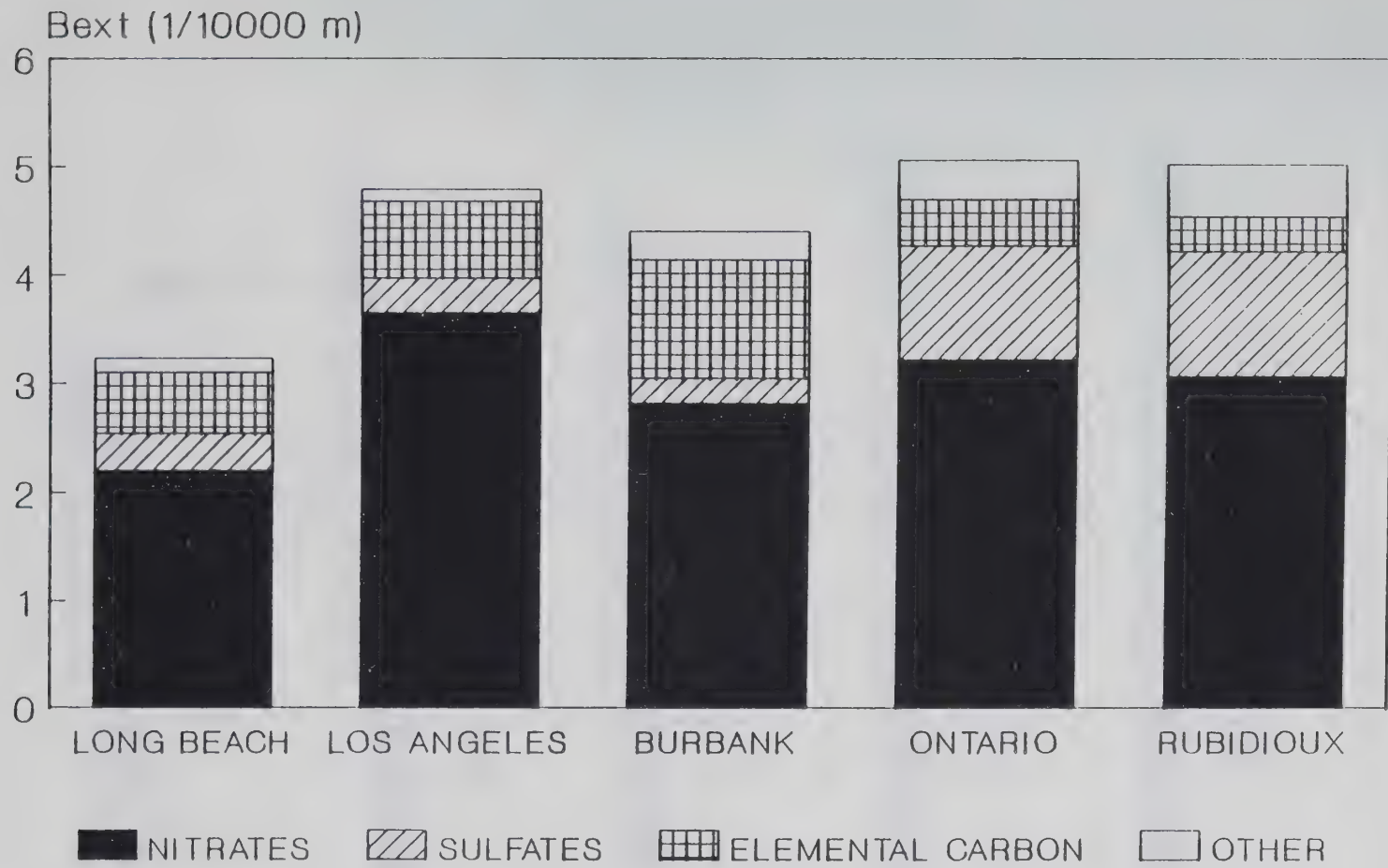


FIGURE IV-2

Extinction coefficient budget for peak 24-hour PM10 event during 1986

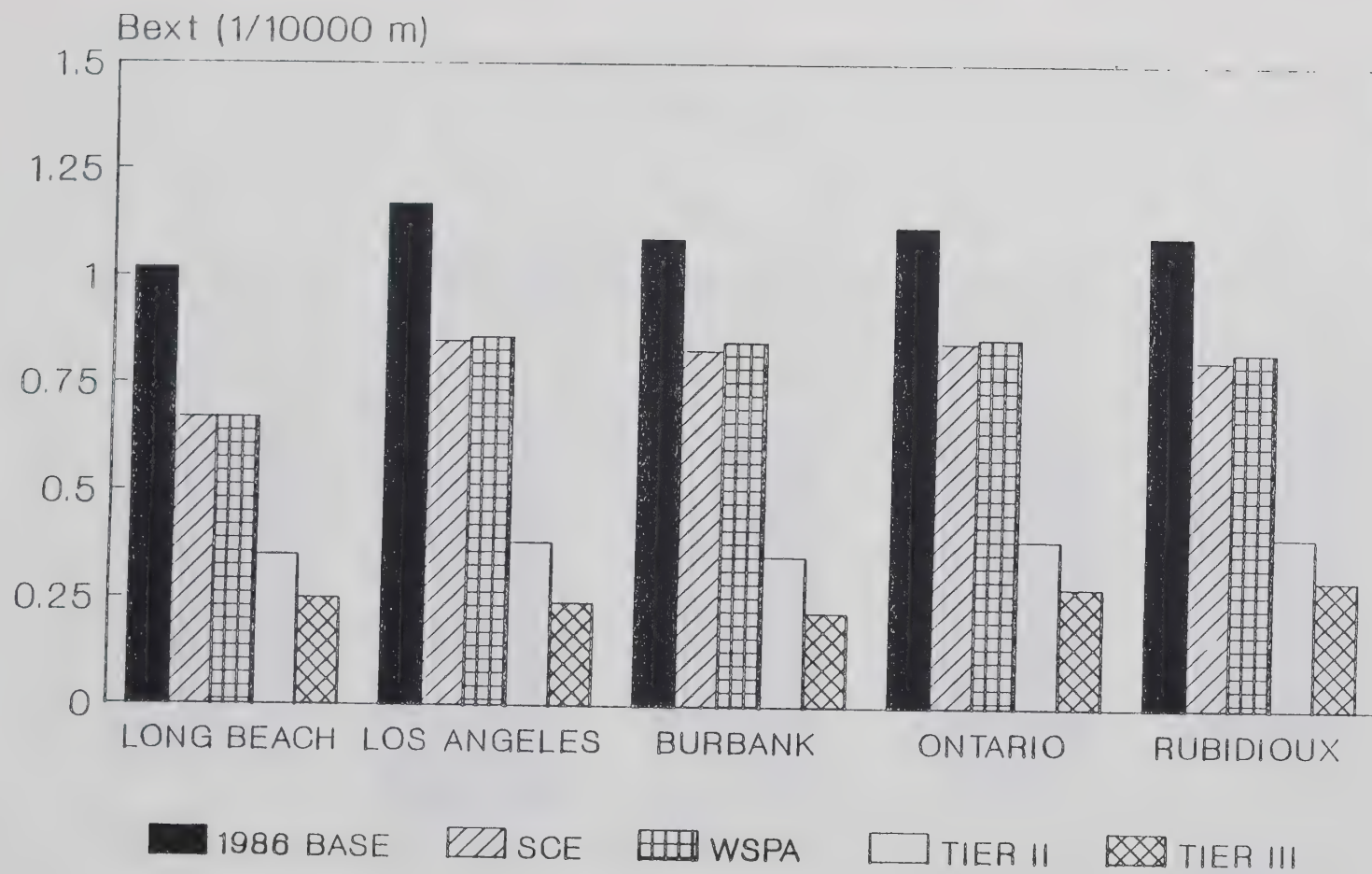
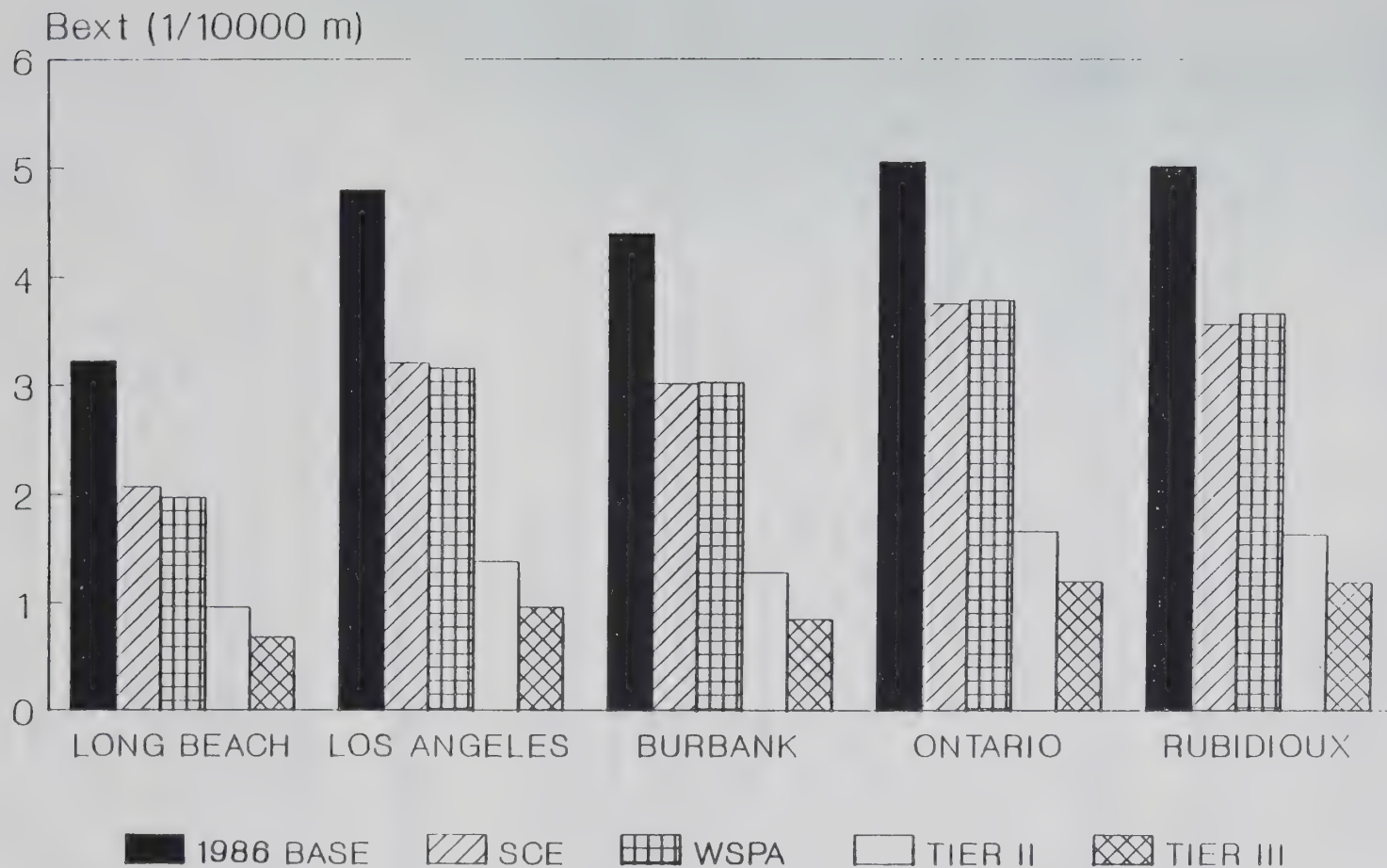


FIGURE IV-3
Projected annual average extinction coefficient

**FIGURE IV-4**Projected extinction coefficient for peak 24-hour PM₁₀ event

and WSPA are expected to reduce B_{ext} by 33 and 34 percent, respectively, of 1986 base case levels. The Tier II control plan reduces B_{ext} by 71 percent, while Tier III achieves an 80 percent reduction.

Impacts on Visual Range -- Standard Compliance

The state standard for visibility requires that the visible range be not less than 10 miles for hours with relative humidity less than 70 percent. There is no 24-hour average or annual average standard. However, Figure IV-4 may be examined for indications regarding future standard compliance. A visual range of 10 miles corresponds to a B_{ext} value of $1.85 \cdot 10^{-4} \text{m}^{-1}$. The SCE and WSPA control strategies are projected to have daily averages of B_{ext} as high as $3.8 \cdot 10^{-4} \text{m}^{-1}$. This corresponds to a visual range less than 5 miles. Therefore, violations of the standard will still occur. Tier II is predicted to produce a daily average B_{ext} value of $1.66 \cdot 10^{-4} \text{m}^{-1}$ at Ontario during the peak PM10 event, which corresponds to a visual range of 11 miles. The highest B_{ext} expected with Tier III controls is $1.20 \cdot 10^{-4} \text{m}^{-1}$ at Ontario, which corresponds to a visual range greater than 15 miles. While these daily averages do not indicate that each hour will meet the standard, it appears that the Tier II scenario will be close to compliance with the standard and that **Tier III controls will meet the state visibility standard**. In addition, this analysis indicates that visual range will be approximately three times greater under the 1988 AQMP Revision than for the SCE/WSPA alternatives.

VISIBILITY OUTSIDE THE SOUTH COAST AIR BASIN

Air contaminants are transported out of the Basin and into other air basins, causing visibility degradation. This is especially true for fine particles which may have residence times in the atmosphere as long as two or three days. Large amounts of visibility reducing aerosol from the Basin has been known to travel through the mountain passes surrounding the Basin into neighboring air basins, such as the Coachella Valley on the southeast and the Mojave Desert on the northeast. In addition, long-range transport may indeed deliver fine particulate matter from the Basin into neighboring states such as Nevada and Arizona, causing significant visibility deterioration to environmentally protected areas like the Grand Canyon.

The long-range transport of fine particulate matter can have serious detrimental effects on other air basins. Apart from population exposure to unhealthful air pollutants and the negative aesthetic effects associated with reduced visibility, both of which are also a concern within the Basin, the reduced visibility in desert areas may severely restrict Department of Defense (DOD) activities. The DOD maintains facilities for training and testing of military aircraft in the air space above the Mojave Desert. The DOD is concerned about impairment to their ability to visually track maneuvers of military aircraft. They experience many occasions when the visual range is obstructed due to long-range transport of air pollutants from the Basin. This has caused them either to lose significant visual information or to forfeit crucial flight time altogether.

NO_x emissions in the South Coast Air Basin result in numerous air quality problems that threaten public health and welfare. These problems include NO₂, PM10, and ozone levels above air quality standards. The most effective means of addressing these problems is through reducing NO_x emissions in conjunction with other air quality improvement actions. A control strategy which contains balanced reductions of NO_x and ROG emissions offers the most rapid method of achieving all air quality standards.

Additional specific findings from the analyses presented in this attachment are:

Nitrogen Dioxide

- o The 1988 AQMP Revision will result in NO₂ levels well below both the federal and California standards.
- o Strategies emphasizing limited control of NO_x, including those proposed by SCE and WSPA, will likely result in levels above both the federal and California standards.

PM10

- o The federal standards for PM10 are currently exceeded in the Basin by a factor of about two.
- o Implementation of Tier I and Tier II controls in the 1988 AQMP Revision will result in attainment of federal PM10 standards by 2010.
- o Implementation of Tier III controls in the 1988 AQMP Revision will result in air quality approaching the more stringent California PM10 standards.
- o Limited NO_x control alternatives will not bring the Basin close to compliance with the federal or California annual or 24-hour PM10 standards.

- o Control strategies suggested by SCE and WSPA will produce 24-hour peak PM₁₀ concentrations almost five times the state standard level.

Ozone

- o Air quality and emissions trend data indicate that concurrent reductions in ROG and NO_x emissions have resulted in a substantial decrease in ozone levels.
- o During historical periods when ROG emissions have been reduced and NO_x emissions were relatively constant ozone air quality has showed insignificant improvement.
- o The 1988 AQMP Revision (Tier III, emphasizing both NO_x and ROG controls) will reduce ozone levels sufficient to meet the federal ozone standard.
- o Alternative strategies suggested by SCE and WSPA with limited NO_x control will not reduce ozone levels enough to achieve the federal standard.
- o The 1988 AQMP Revision control strategy will provide a greater margin of safety concerning future ozone levels than the limited NO_x control alternatives.
- o ROG emission reduction shortfalls under the limited NO_x control alternatives would result in an increase of peak ozone levels about twice that which would occur for a similar shortfall under the 1988 AQMP Revision control strategy.

Visibility

- o Approximately 40 percent of the visibility impairment in the Basin is due to the presence of particulate nitrates.

SECTION V CONCLUSIONS

- o Limited NO_x control alternatives (i.e. SCE and WSPA proposals) will improve the annual average visual range from about 16 miles (at present) to 22 miles (in 2010).
- o The 1988 AQMP Revision control strategy will improve the annual average visual range to 77 miles by 2010.

ATTACHMENT 3

AIR QUALITY IMPACTS FROM AMMONIA SLIP

**Air Quality Impacts From Ammonia Slip
Assumptions and Calculations**

AIR QUALITY IMPACTS FROM AMMONIA SLIP

Selective Catalytic Reduction (SCR) is a post combustion control technology to reduce NO_x emissions from stationary sources. For optimum operation, excess ammonia is injected into the flue gas to maximize the NO_x reduction reaction. The amount of ammonia injected into a unit is typically in a 1:1 ratio of ammonia to inlet NO_x .

The District has identified several short-term control measures to reduce NO_x emissions from stationary sources. Currently, the District has further developed, or is developing these control measures into District rules. Units affected by four of these rules (1109, refinery boilers; 1134, gas turbines; 1135, utility boilers; and 1146, commercial boilers and heaters) may use SCR to comply with each rule's emissions reduction requirements. Proposed rule 1165, ship berthing does not involve a stationary combustion source and will not be considered further. The emission limit for amended Rule 1146 is less stringent than the emission limits for the above rules. However, the NO_x emission limit is stringent enough that some units may have to retrofit with SCR systems.

If the majority of units affected by Proposed Rules 1134 and 1135 and amended Rules 1109 and 1146 retrofit with SCR, the cumulative ammonia emissions may offset the NO_x reductions resulting from these rules. Therefore, it is necessary to calculate the total amount of ammonia slip that may result from implementing these three rules, and compare these results with the anticipated NO_x reductions.

DETERMINING AMMONIA SLIP

The amount of ammonia injected into the flue gas is proportional to the concentration of inlet NO_x . Therefore, the amount of ammonia slip in the outlet flue gas should also be proportional to the amount of NO_x in the flue gas. However, this proportion will be affected by the following design conditions: the outlet NO_x required by the particular rule, for example, Proposed Rules 1134 and 1135 and the Amendment to Rule 1109 require a

NO_x emission limit of approximately 0.03 pound of NO_x per million Btu of heat input; and the actual ammonia slip, which is typically 5 - 10 ppm.

If the weight of the NO_x in the outlet flue gas is known, it should be possible to determine the weight of the ammonia slip because they are proportional. Table 1 below shows the ammonia slip estimates for each of the four rules under consideration.

TABLE 1
Ammonia Slip Estimates¹
And Total Daily Emissions Reductions

| Rule | Daily Emissions Reductions | Daily Ammonia Slip | Daily Ammonia Reductions | Total Daily Emissions |
|----------------|----------------------------------|--------------------------|--------------------------------|--------------------------|
| 1134 | 13.9 | | 1.07 | 12.83 |
| 1135 | 17.7 | | 1.18 | 16.52 |
| 1109 | 27.8 ² | | 1.6 | 26.2 |
| 1146 | 9.0 | | N.A. | 9.0 |
| 1146 Amendment | 0.5 | | 0.28 | 0.22 |
| 1165 | 5.0 | | N.A. | 5.0 |
| Totals | 73.9 | | 4.13 | 69.77 |

¹ See the next section for the assumptions used to determine ammonia slip and for the calculations.

² This figure does not include the 14.2 t/d reduction resulting from the 1985 version of the rule.

Table 1 indicates that the total ammonia slip resulting from the three rules of concern is 4.13 tons of ammonia per day versus the projected NO_x reduction of 69.77 tons per day from current and proposed NO_x reduction rules. Therefore, the ammonia slip resulting from the Proposed Rules and the Proposed amendment will slightly offset the benefits of these rules by contributing to PM emissions.

Because of its buoyancy, ammonia slip emissions would be more readily dispersed because they would rise to higher altitudes with little possibility of

lingering at ground level (Benchley and Athey, 1981). This diluting effect would result in ground level ammonia concentrations of less than one part per million at the point of maximum impact (annual one hour maximum) (Eschenroeder, et al., 1987). This concentration is below the odor detection limit (1 ppm) and would not be expected to have adverse human health impacts.

ASSUMPTIONS AND CALCULATIONS

The major assumptions regarding determining ammonia slip are that the molar ratio of injected ammonia to NO_x in the flue gas are one and that the actual ammonia slip is proportion to amount of NO_x in the outlet flue gas. Therefore, if:

$$(1) \quad \begin{array}{llll} W & = & V \times D & \text{where} \\ W & = & \text{Weight} & \\ V & = & \text{Volume} & \\ D & = & \text{Density (N.B. Density is proportional to} & \\ & & \text{molecular weight)} & \text{and} \end{array}$$

ammonia is proportional to NO_x , then

$$(2) \quad W_{\text{NO}_x} = V_{\text{NO}_x} \times D_{\text{NO}_x} : W_{\text{NH}_3} = V_{\text{NH}_3} \times D_{\text{NH}_3} =$$

$$(3) \quad \frac{W_{\text{NO}_x}}{W_{\text{NH}_3}} = \frac{V_{\text{NO}_x} \times D_{\text{NO}_x}}{V_{\text{NH}_3} \times D_{\text{NH}_3}} =$$

$$(4) \quad W_{\text{NH}_3} = \frac{V_{\text{NH}_3}}{W_{\text{NO}_x}} \times \frac{D_{\text{NH}_3}}{D_{\text{NO}_x}} \times D_{\text{NO}_x}$$

Using equation (4) it is now possible to determine the ammonia slip for each rule.

Proposed Amendment to Rule 1109, refinery boilers and process heaters:

Given: Current NO_x emissions from this source category = 34.9 t/d
 Expected NO_x reductions = 27.8 t/d
 Remaining NO_x emissions = 7.1 t/d
 NO_x flue gas volume = 0.03 lb/MMBtu
 0.02 lb/MMBtu = 25 ppm
 Ammonia slip = 10 ppm
 Molecular weight of NO_x = 30.006 lbs/mole
 Molecular weight of ammonia = 17.031 lbs/mole

$$W_{\text{NH}_3} = 7.1 \text{ t/d} \times 25 \text{ ppm} \times \frac{10 \text{ ppm}}{30.006} \times \frac{17.031}{17.031} = 1.6 \text{ t/d} = 588.8 \text{ t/yr}$$

Proposed Amendment to Rule 1134, gas turbines

Given: Current NO_x emissions from this source category = 18.6 t/d
 Expected NO_x reductions = 13.9 t/d
 Remaining NO_x emissions = 4.7 t/d
 NO_x flue gas volume = 0.03 lb/MMBtu
 0.03 lb/MMBtu = 25 ppm
 Ammonia slip = 10 ppm

$$W_{\text{NH}_3} = 4.7 \text{ t/d} \times 25 \text{ ppm} \times \frac{10 \text{ ppm}}{30.006} \times \frac{17.031}{17.031} = 1.07 \text{ t/d} = 390.6 \text{ t/yr}$$

Proposed Amendment to Rule 1135, utility boilers

Given: Current NO_x emissions from this source category = 25.6 t/d
 Expected NO_x reductions = 17.7 t/d
 Remaining NO_x emissions = 7.9 t/d
 NO_x flue gas volume = 0.03 lb/MMBtu
 0.03 lb/MMBtu = 25 ppm
 Ammonia slip = 10 ppm

$$W_{\text{NH}_3} = 7.9 \text{ t/d} \times 25 \text{ ppm} \times \frac{10 \text{ ppm}}{30.006} \times \frac{17.031}{17.031} = 1.18 \text{ t/d} = 657.0 \text{ t/yr}$$

Proposed Amendment to Rule 1146, commercial boilers and heaters

Given: Current NO_x emissions from affected units = 8 t/d
 Expected emissions resulting from Rule 1146 = 2 t/d
 Expected NO_x reductions from the Amendment = 0.5 t/d
 Remaining NO_x emissions = 1.5 t/d
 NO_x flue gas volume = 30 ppm
 Ammonia slip = 10 ppm

$$W_{\text{NH}_3} = 1.54.7 \text{ t/d} \times 30 \text{ ppm} \times \frac{10 \text{ ppm}}{17.031} = 0.28 \text{ t/d} = 103.5 \text{ t/yr}$$

ATTACHMENT 4

ACID DEPOSITION

Acid Deposition

ACID DEPOSITION

In 1982, the California Legislature adopted the Kapiloff Acid Deposition Act which required the California Air Resources Board (ARB) to establish a comprehensive research and monitoring program to investigate acid deposition in California. The Act expired in December 1988. The following summary presents the key findings of this research program and relies principally on information recently published by ARB (ARB, 1988a; 1988b).

Nature of Acid Deposition in California

Concentrations of acidic air pollutants in the Basin are among the highest in the world. The acidic air pollutants are deposited through substantial dry deposition, and through wet deposition in the form of rain, fog, and dew occurring intermittently. The acidity is caused primarily by emissions of nitrogen oxides (NO_x) and sulfur oxides (SO_x) from both mobile and stationary sources which react in the atmosphere to form nitric and sulfuric acids, respectively.

Nitric acid is the major constituent of acid deposition in the Basin. Concentrations of nitric acid measured in the Basin area are two to three times higher than those measured in other parts of the United States. Nitric acid is rapidly incorporated into cloud and fog droplets and is primarily responsible for the highly acidic fog and clouds. Samples of fog-water collected in the western part of the Basin were found to be consistently acidic with pH ranging from 2 to 4. The most acidic fog measured to date was at Corona del Mar during a period of atmospheric stagnation in the Basin. The fog acidity was measured at pH 1.69, which is more acidic than lemon juice. Figure V-1 illustrates typical pH measurements in the Basin.

The Basin also has the most acidic rainfall measured in California. Acidic rainfall occurs primarily in the vicinity of and downwind of major industrial sources of SO_x and NO_x emissions. The highest sulfate concentrations occur in major industrial source areas in the west side of the Basin. Nitrate concentrations are not as localized as sulfate concentrations and are found to be highest in rain water in Pasadena, reflecting higher emissions of NO_x from major industrial sources and from motor vehicles. Urban sites near the coast tend to have the most acidic rain due to higher pollutant emissions and lower concentrations of ammonia and alkaline particles that can neutralize acids.

The emissions of NO_x far exceed the emissions of SO_x , and the ratio of sulfates to nitrates in the atmosphere parallels the ratio of emissions of SO_x to NO_x . The atmospheric processes governing the fate of emitted acid precursors are extremely complex and depend on many factors. The amount of acid deposited at a given receptor site depends on the location and magnitude of emission sources, the meteorological processes which transport and disperse pollutants, the rate of chemical processes that convert the acid precursors into acids, and the rates of dry and acid deposition.

Acid rain data collected for 1978-1987 indicates decreased sulfate concentration consistent with decreased emissions of sulfur oxides. This is not the case for nitrate data where the 10-year trend is variable despite an 18 percent reduction in vehicle emissions and a 12 percent reduction by industries.

Transport

There are no significant upwind anthropogenic sources of acid precursors so that pollutants contributing to acid deposition are by and large generated within the Basin. Transport of pollutants out of the Basin, east from Los Angeles into the desert was highlighted in a World Resources Institute study in 1985 (WRI, 1985). Wind trajectory studies (Hering et al., 1981; Macias, E. S., and J. O. Zwicker, 1981; Macias et al., 1981) have documented the transport of ozone, sulfate and other aerosols from Southern California to northwestern Arizona. However, for nitric acid, its precursors, and related nitrogen compounds, modeling studies funded under the Kapiloff program indicate that they are deposited soon after they are emitted or formed in the atmosphere (Caltech, 1987). This implies that long-range transport of acidic nitrogen compounds is not as significant as the transport of other pollutants. In addition, the Basin's meteorology and topography favor local transport over long-range transport in most cases.

Effects of Acid Deposition

Clinical studies have shown that acidic fogs increased symptoms and decreased lung function in asthmatics (Sheppard, 1988). Another study showed that cellular changes occur in many parts of the lung due to breathing acid atmospheres for prolonged periods of time (Phelan and Kleinman, 1988). Research on the effects of combined acid-ozone atmospheres indicate that exposure to nitric acid and ozone together is more harmful to the lungs than exposure to ozone alone (Mautz, 1988). This is of concern because high levels of nitric acid and ozone commonly occur together in polluted areas of Southern California.

Laboratory studies show that plant damage occurred after repeated exposure to highly acidic fogs (Bytnerowicz et al., 1988). When acids and ozone exposures were combined, the damage to crops is additive.

Investigation of the effects of acid deposition on materials shows that over \$50 million worth of damage to painted surfaces occurs every year in the Basin due to acidic and other pollutants (Murray et al., 1985). In laboratory studies, nitric acid dosages equivalent to two years of ambient exposure in the Basin were shown to cause significant damage to galvanized steel and carbon steel (Whitbeck and Jones, 1987). Galvanized steel is an important building material in the Basin, and is widely used for transmission towers and utility poles, barns for feed lots and grazing operations, chain link fence and guardrails.

Acid Deposition Standards

The Kapiloff Acid Deposition Program findings clearly implicate emissions of nitrogen oxides and sulfur oxides as the major cause of acid deposition in the California. Regulatory goals are being developed to avoid risks to health and significant damage to aquatic systems, materials, and forests. However, ARB has proposed an additional period of evaluation and monitoring of acid deposition before developing acid deposition standards or emission controls based solely on acid deposition effects (ARB, 1988b). In the absence of standards, controls on NO_x and SO_x emissions should be continued to attain and maintain existing ambient air quality standards and help reduce the level of acidity in the Basin.

ATTACHMENT 5

ELECTRIFICATION STRATEGY

Electrification Strategy

ELECTRIFICATION STRATEGY

According to the AQMP analysis, in order to attain the clean air standards, the air basin needs to use very low emitting vehicles (e.g., as clean as electric vehicles) to replace all gasoline powered light- and medium-duty vehicles (Tier II and Tier III) for ROG control purposes. Also, to the extent technically and economically feasible and in an energy efficient manner, industrial combustion sources would be further controlled to reduce NO_x emissions to attain the NO_x and PM₁₀ air standards. The draft plan calls for electrification of internal combustion (I/C) engines and utility equipment as Tier I controls. In Tier II, 50 percent of remaining fuel combustion emissions from industrial sources after Tier I needs to be eliminated. The control technology being contemplated is electrifying combustion processes. Note that if reductions can be achieved without electrification, the AQMP does not prohibit such controls. Assuming electrification is to take place, the additional energy demand for the air basin by the year 2010 due to electrification is revised in Table 5-1 as follows:

Table 5-1 - Energy Forecast for
AQMP Electrification Strategy
(Year 2010)

| Electrification Measures* | Energy(GWh/Yr) | Capacity(MW) | |
|---------------------------|----------------|--------------|-------|
| | | AM | PM |
| Tier I | 2,500 | 300 | 200 |
| Tier II | 18,000 | 1,400 | 2,700 |
| Tier III | 40,000 | 2,700 | 6,300 |
| Total | 60,500 | 4,400 | 9,200 |

* Tier I electrification measures: I/C engines, utility equipment, cold ironing, transit buses, and railroads. Tier II targets: Reducing the remaining emissions from industrial fuel combustion sources after Tier I by 50 percent; 20 percent passenger electric vehicles (@ 0.75 kwh/mile). Tier III goals: 100 percent passenger electric vehicles (@ 0.5 kwh/mi).

SCAQMD's preliminary analysis of power supply indicates that the daytime

power demand can be met by using solar power and achieving 15 percent energy conservation in the residential and commercial sectors (part of SCAG's energy conservation measures) by 2010. This target is achievable and should be aggressively pursued especially through application of solar heating, heat pumps, and the best available energy-efficient technologies for residential gas-fired water heaters and furnaces, commercial lighting, and air conditioning (per CEC comments). It is also reasonable to believe that a certain portion of electric vehicles would be powered by solar or fuel cells because the large market demand will become a significant driving-force to bring about EV technology advancement and performance improvements. This will relieve some pressure on the electric utility supply system. Nighttime battery charging for EVs should use excess power capacity during off-peak hours (nighttime) from the projected available in-basin and out-of-basin energy resources by the year 2010, before planning for constructing new power plants. Nighttime hydropower from out-of-state sources should also be pursued to the extent possible to offset the nighttime demand. The remaining demand could then be met by fuel cells and by repowering of existing in-basin older units with advanced combined cycle technology (about 60 to 70 percent of existing system heat rate). To summarize the discussion on power supply, the District suggested supply options are illustrated in Table 5-2 below:

Table 5-2- Potential Power Supply Matrix
for the Basin

| Demand | Capacity(MW) | |
|------------------------------------|---------------|---------------|
| | AM 4,400 | PM 9,200 |
| Supply | | |
| <u>In-Basin:</u> | | |
| Conservation | 1,900 | 900 |
| Solar Power | 1,500 - 2,000 | |
| Solar/Fuel Cell EVs | 300 - 1,000 | |
| Off-peak Excess | | 1,000 - 2,000 |
| Fuel Cells | 500 - 1,000 | 500 - 1,000 |
| Repowering | | 500 - 1,000 |
| <u>Out-of-Basin:</u> | | |
| Hydropower | | 500 - 1,500 |
| Off-peak Excess | | 3,000 - 4,000 |
| Geothermal | 500 - 1,000 | 500 - 1,000 |
| Thermally Enhanced Oil Recovery | 1,000 - 2,000 | 1,000 - 2,000 |

As can be seen, this supply matrix does not burden neighboring areas with any new fossil fuel or nuclear power plants. Therefore, the air basin will not achieve clean air by exporting pollution. A significant portion of the needed power supply would come from in-basin sources. Yet, the only new installations required in the basin would be solar power plants, a renewable, non-polluting energy source. The above supply matrix, although preliminary, provides a sketch of the basin's energy future from an air quality prospective. It should also be noted that the bulk of the power required is to charge electric vehicles, which can be accomplished either during the day or at night, depending on the availability of energy resources. For instance, if more solar power plants are constructed than expected, proportional electric vehicle battery charging can be shifted to daytime. Therefore, the daytime/nighttime demand and supply curves will continue to be revised to reflect the most efficient and economical way of consuming energy.

SCAQMD recognizes that energy demand and supply forecast is a complicated issue. Therefore, the analysis to this date is by no means final, but rather the beginning of a long term planning process. SCAQMD will

continue to work with the CEC, PUC, utilities and other interested groups to analyze energy demand and supply further and to address other issues such as energy supply system, transmission capacity, out-of-state energy supply, energy conservation programs, etc.. Such meetings are presently being arranged and a task force will be formed shortly after the plan adoption to lay out a more detailed work plan to address critical energy issues.

In dealing with electrification strategy, the District has taken the first step to analyze potential electricity demand and supply, according to the extent of electrification specified by the AQMP. This is the purpose of Appendix IV-B - Tier III Control Strategy: Energy Future. This appendix will be updated to reflect the energy forecast based on control measures in the AQMP such as SCAG's energy conservation measures and VMT controls. If the power supply appears to be available to meet AQMP-based demand, the next step is to analyze process-specific electrotechnology. The AQMP has identified a long term study plan for electrotechnology development. This is to ensure that prior to rule adoption, electrotechnology must pass the same technical, energy-efficiency, and cost-effectiveness tests as other SCAQMD adopted control measures.

With respect to electrotechnology, the District acknowledges that applications of many types of industrial electrotechnology currently used to replacement fuel combustion are limited. The potential for expansion of such applications to a larger scale or to other source categories is uncertain, but not impossible. Therefore, electrotechnology is considered mostly a Tier II or Tier III control where technologies require further development, as opposed to a Tier I control, which represents currently available technology.

The inclusion of the electrification strategy in the AQMP is important to provide the District as well as industry with long term research and development guidelines. However, this approach should not be interpreted as excluding other low-emitting technologies, such as advanced natural gas technologies. Technologies which can achieve the same emission reduction goals as electrification will be considered by SCAQMD. Viable technologies identified in the future will be incorporated into the subsequent AQMP revisions. SCAQMD appreciates SoCal Gas Company's information on the status and research effort for advanced natural gas technologies. It will be further reviewed and compared with current gas combustion technology and potential electrotechnology. SCAQMD urges the industry to continue developing non-polluting technology to achieve the clean air goals we all share.

ATTACHMENT 6

METHANOL

Methanol Production and Distribution

Formaldehyde Formation From Methanol Combustion

METHANOL PRODUCTION AND DISTRIBUTION

Methanol is produced primarily from natural gas, but can also be produced from coal and other organic feedstocks. Methanol production capacity from natural gas in the U.S. and worldwide currently exceeds demand by a large margin. The California Energy Commission is investigating the feasibility of using methanol as an alternative to oil-based fuels. CEC concluded that methanol is cleaner burning than all other fuels except hydrogen and can be economically competitive if sold to a mass market (SCAQMD, 1986)

Perhaps the major drawback to using methanol is that it is not economically competitive with fossil fuels. Another problem, which also adds to the cost, is the lack of market infrastructure for its transport and delivery. Currently methanol is not produced in California. All methanol used by California Energy Commission (CEC) programs is provided under contract by the Celanese Corporation from its Alberta, Canada plant (California Methanol Task Force, 1987). Methanol supplied by Celanese arrives in the Basin by rail tank car and is unloaded into a dedicated tank at the GATX Terminating Corporation's San Pedro Chemical Terminal. The methanol is then delivered to customers by a dedicated truck fleet.

In the near-term methanol produced from natural gas could be competitive with fossil fuels (CCEEB, 1987). Potential sources of supply include Canada, Mexico, Malaysia, New Zealand, and South America, all of which have or are constructing methanol production facilities using unconventional natural gas supplies (gas that is not economically marketable via pipeline). At a District sponsored conference on methanol, several domestic oil companies indicated that, if the demand for methanol increases sufficiently, they would begin producing and supplying methanol to meet the increased demand. Methanol would also be economically competitive if the price of crude oil were to double.

In the long-term, methanol could be economically competitive with fossil fuels if it received the same tax advantages and government assistance as those currently granted to oil production. This unequal tax treatment undermines methanol's economic competitiveness (CCEEB, 1987).

If methanol use in the South Coast Air Basin (Basin) were to increase, rail

tank car delivery could be augmented or replaced by vessel and barge deliveries. If the sales volume of methanol increased substantially, methanol might then be delivered by pipeline. Pipelines, because of their substantial economies of scale, can be a very inexpensive means of transporting large quantities long distances (D'Eliscu, 1987). In addition, methanol spills or leaks from a pipeline would have less of a detrimental environmental effect than would oil spills because methanol is rapidly dispersed and diluted, it quickly evaporates, and can be biologically degraded in both aquatic and terrestrial habitats (D'Eliscu, 1987). Long-term disruptions to fisheries, or bird and mammal populations are considered unlikely in all but the most localized, worst-case possibilities (D'Eliscu, 1987).

A common criticism of attempts to convert to clean fuels is that there is no market infrastructure supply network currently in place. The Methanol Task Force (1987) describes one "technically feasible means of expanding the [methanol] supply network" to meet an increasing demand. While this is not the scenario proposed by the AQMP, it describes one method to increase supply without disruptive changes. An overview of the scenario is provided below.

Current System

Volumes: 50,000 gal/yr of methanol.

Terminal Receipts: Rail tank cars or tank trucks.

Terminal: GATX chemicals terminal with a dedicated tank and truck rack.

Blending: Splash blended in the tank truck; truck makes a separate stop at a gasoline terminal. (if necessary)

Distribution: Trucked directly to the outlets.

Outlets: State leased space at service stations (5); privately owned fleet fuel stations (6)

Phase I Expansions (Maximum Use of Chemical Type Terminal)

Volumes: 500,000 to 50,000,000 gal/yr of methanol.

Terminal Receipts: Chemical vessel, chemical barge or rail tank cars.

Terminal: GATX or similar chemical terminal operation with dedicated lines from wharf to tank to trucks. Move to round-the-clock operation to meet increased volumes. Utilizes at least 15 percent of GATX chemical tankage and two of seven truck racks.

Blending: Splash blended in the tank truck; truck makes a separate stop at a gasoline terminal. (if necessary)

Distribution: Five dedicated trucks (tractor with two tank trailers) deliver directly to the outlets.

Outlets: 100 to 250 new outlets (at existing stations) -- represent two to five percent of all basin outlets.

Phase II Expansion (Development of a Dedicated Methanol Terminal)

Volumes: 50,000,000 to 250,000,000 gal/yr of methanol.

Terminal Receipts: Vessel, barge and rail car.

Terminal: Expansion or modification of an existing L.A. harbor petroleum products terminal. Dedicated internal floating roof tanks and truck loading rack (three bays). Wharf to terminal pipeline may or may not be dedicated.

Blending: Gasoline and methanol blended in-line during truck loading. (if necessary)

Distribution: Dedicated truck fleet, delivers directly to the outlets. No use of inland terminals or common carrier pipelines.

Outlets: Total of 500 outlets (methanol as a high volume product at

ten percent of all basin outlets). (Source: Methanol Task force, pp. 13-14, 1987.)

FORMALDEHYDE FORMATION FROM METHANOL COMBUSTION

The threshold limit value (TLV) for formaldehyde recommended by the American Conference of Governmental Industrial Hygienists (ACGIH, 1986) is a time-weighted-value of 1 ppm over an eight hour exposure. Generally, OSHA uses TLVs to determine the permissible exposure levels (PEL) to workers. Therefore, in December 1987, OSHA reduced the PEL from 2 to 1 ppm as a time weighted average over eight hours.

Greater use of methanol may result in increased formation of aldehydes, primarily formaldehyde. Formaldehyde can irritate the nose and throat and is considered an animal carcinogen. However, at this time, any possible chronic effect on humans has not been confirmed and is highly controversial (Southern California Gas Company, 1985, as cited in American Gas Association, 1986).

There have been a number of field test demonstrations of methanol fueling on stationary sources, demonstrating that, in most cases, formaldehyde emissions have been kept well below the 1 ppm PEL. For example, methanol was used to fuel a 3,250 kW Allison 501-KB gas turbine cogeneration plant located at the University of California at Davis. Without water injection and at full load, aldehyde emissions were relatively low, 0.02 ppm. However, as the load was reduced aldehyde emissions increased. The higher flow rate fuel nozzles may be partially responsible for the increase of combustible emissions due to less effective atomization at low flow rates. Water injection influenced aldehyde emissions only during low load tests, while emissions at full load were not affected and remained low, approximately 0.05 ppm.

In another field test demonstration, Southern California Edison (SCE) tested methanol fueling on their TPM FT4C-1DF gas generators at their Ellwood Energy Support Facility (Weir et al., 1981). The results indicated that the NO₂ emission level was 8-10 ppm during baseload operations, "with water injection having very little effect on emissions." Further, aldehyde emissions

were "negligible," although they increased up to 1.8 ppm after 500 hours of operation. However, aldehyde emissions were higher with natural gas than with either of the liquid fuels. SCE concluded that, "it can be stated that methanol is a much cleaner fuel with respect to emissions than Jet A (distillate) fuel. The only practical limitations to its present use over conventional liquid fuels are its cost and availability. If low cost methanol supplies in adequate quantities are assured, its use would appear to be beneficial" (Weir et al., 1981).

Southern California Edison Company also tested methanol fueling on Boiler 4 at their Highgrove Generating Station (Weir et al., 1982). At full load, NO_x emissions were reduced 62 percent below the baseline level with natural gas and approximately 58 percent below fuel oil. NO_x was further reduced with water injection. Aldehyde emissions were less than 1 ppm, "with no significant differences observed between methanol, fuel oil and natural gas" (Weir et al, 1982).

The New Orleans Public Service Companies conducted a full scale test at the New Orleans Public Service Companies, Unit #3, on a 49 MW Babcock and Wilcox. The results indicated that spot analyses for aldehydes, organic acids, and hydrocarbons indicated negligible quantities (no data given) (Adamian and Perrine, 1987).

A full scale demonstration in Florida on a 26 MW gas turbine was conducted which "demonstrated stable operation, clean combustion and low NO_x emissions," (Adamian and Perrine, 1987). Aldehyde emissions for methanol firing were 1 ppm, "which is far lower than aldehyde emissions from natural gas firing but considerably higher than that of distillate fuel firing (Adamian and Perrine, 1987).

These field test demonstrations indicate that under most (but not necessarily all conditions) formaldehyde emissions (as measured by aldehyde emissions) can be maintained below the 1 ppm PEL. Therefore, by following proper operating procedures, for example, gas turbines using fuel nozzles with a lower flow rate with more effective atomization, and installing continuous monitoring devices, formaldehyde emissions can be maintained below levels that can affect worker health.

Formaldehyde emission from methanol fueled vehicles is another concern associated with widespread use of methanol fuel. Emission standards for these vehicles are currently being drafted and scheduled for consideration for

adoption by the ARB Board on March 9, 1989. These standards are to include emission standards for formaldehyde. Moreover, Southwest Research Institute, under a research contract with ARB, is testing different catalyst samples provided by various catalyst manufacturers. The objective of this study is to identify the most effective catalyst catalyst formulation/system that can reduce formadelhyde emission from methanol fuel vehicles. A SAE paper prepared by Nagalizgam, Ganeson, Gapulakrishnan, and Murphy (SAE 811220) which is included in Appendix IV-E of the AQMP, also presented several possible alternatives that can be used in the control of formaldehyde. These alternatives include adjusting engine parameters, adding small quantities of aniline to the fuel, and surface ignition, etc. These methods, however, need to be investigated further.

ATTACHMENT 7

SCR CATALYST DISPOSAL

Introduction

Disposal of Spent Catalysts

Cumulative Solid Wastes Impacts

INTRODUCTION

The configuration and composition of SCR catalyst reactors vary depending upon the vendor, the type of installation on which it will be used, type of fuel, characteristics of the fuel, allowable ammonia slip, etc. In general, the design of the catalyst attempts to maximize the surface area to augment the reaction between ammonia and NO_x . Some of the various types of catalysts include pellets, cylinders, corrugated plates, and honeycomb modules. Pellet type catalysts were one of the earliest types of catalysts developed. However, other catalyst structures are preferred because they promote flue gas flow and are less prone to clogging.

There are two general categories of SCR catalyst structures. The first category includes those catalysts in which the supporting structure is composed of a structural metal such as steel. The structure is then coated with a base material that is bonded to the support structure. The actual catalyst material is then applied and baked onto the basecoat material. The second type of catalyst is one in which the support structure is composed of a ceramic/catalyst material. In general, most catalyst structures, i.e., the corrugated plates or honeycomb modules, etc., are encased in a metal frame. These modules are then placed into a larger metal block structure.

SCR catalysts typically have a life span of 2 - 4 years, depending upon the type of fuel used, impurities in the fuel, and the NO_x emission reduction efficiency required. Some vendors will guarantee at least two years, although they believe the catalysts actually last much longer. Eventually, NO_x reduction efficiency declines, while ammonia slip levels increase. To maintain high NO_x reduction efficiency and low levels of ammonia slip, owner/operators can replace the entire catalyst or remove and replace part of the catalyst (partial replacement).

The exact composition of SCR catalysts is proprietary information, but vendors agree that catalysts contain small amounts of vanadium pentoxide. Vanadium is a widely distributed element, occurring in many types of fuel. It can be emitted into the atmosphere by power plants using crude oils and/or coal, or by industries engaged in refining crude oil (Sharma, et al., 1980). In general, the toxicity of vanadium depends upon its chemical form, increasing

with increasing valence (Sharma, et al., 1980). The pentavalent vanadium compounds are considered the most toxic (Sharma, et al., 1980).

In most cases, catalyst components present little health risk (Eschenroeder, et al., 1988). In addition, "Available physical/chemical information on most of these forms [catalyst materials] suggested limited solubility in water, and chemical stability except under strongly acidic or basic conditions" (Eschenroeder, et al., 1988). According to Eschenroeder et al. (1988), 5 to 10 percent of the catalyst material is composed of V_2O_5 . However, according to industry representatives contacted by the District, five percent is a more realistic upper limit.

The Environmental Protection Agency (EPA) considers pure, commercial-grade V_2O_5 a hazardous material. However, according to the EPA's RCRA hotline, compounds containing V_2O_5 , or V_2O_5 used in, or resulting from an industrial or commercial process, are not considered hazardous materials. California, which often has more stringent regulations regarding hazardous materials than does the federal government, classifies V_2O_5 as "toxic and extremely hazardous" under the California Code of Regulations (CCR), Title 22, Section 66680 (Eschenroeder, et al., 1988).

Health impacts resulting from V_2O_5 depend upon the dose and route of exposure. Ingested V_2O_5 is relatively non-toxic due to poor absorption in the gastrointestinal tract, while inhaled V_2O_5 , particularly soluble compounds, can produce respiratory problems such as: tracheitis, bronchitis, emphysema, pulmonary edema, or bronchial pneumonia (Eschenroeder, et al., 1988). However, no studies of V_2O_5 exposure have shown evidence of specific chronic lung lesions (Eschenroeder, et al., 1988).

DISPOSAL OF SPENT CATALYSTS

The capacity of SCR catalysts to reduce NO_x to elemental nitrogen and water declines over the course of several years. The spent catalyst material must then be removed and disposed of, and a new catalyst material must be installed. Disposal of spent SCR catalysts could result in a negative impact to solid waste disposal sites because of the increased amount of wastes generated. In addition, since catalysts contain a hazardous substance, vanadium pentoxide, they may require disposal in Class I landfills, of which

there are only two in California. A rough estimate of the total amount of catalyst that would be required to meet the needs of facilities affected by the Proposed Rule was recently submitted to the District (Eschenroeder, et al., 1988). This projection, based on SCE's demonstration test at their unit 2 in Huntington Beach, estimates that approximately 6,067 tons per year of spent catalyst reactor material will be generated in the Basin. Finally, there is speculation that disposal of spent catalysts containing water soluble forms of V_2O_5 could contaminate aquifers (Eschenroeder et al., 1988).

Actual experience with catalyst disposal in California is limited because no catalysts have yet been replaced. For example the first catalyst installed in California on a commercial installation, went online in 1984 and is still in operation. For these reasons it is difficult to determine various environmental impacts.

"Some vendors of SCR equipment have suggested ways in which they may assist users in disposing of spent catalyst materials such as:

- a) Receiving the material for storage at the vendor's facilities.
- b) Landfilling the material in the vendor's (sic) locales.
- c) Reclaiming the catalyst or recovering valuable components" (Eschenroeder et al., 1988).

However, because experience with catalyst disposal is limited, "these suggestions must be regarded with some degree of caution. For example, it has never been reported that vendors write in their performance guarantees any assurances with respect to these matters" (Eschenroeder et al. 1988).

It has been asserted that vendors have not given written guarantees to their customers regarding catalyst disposal is incorrect. When contacted by the District, one vendor indicated that they currently have a written maintenance and disposal option they provide to their customers. Such an option is provided at an additional cost. Three other vendors contacted by the District indicated that they would also provide a written guarantee of catalyst disposal. Their rationale is that they may be at a competitive disadvantage if they do not guarantee disposal of spent catalysts.

The major U.S. manufacturer of SCR catalyst systems, is continuing to develop methods for reactivating or recycling used or spent catalysts. This

vendor guarantees that any spent SCR catalysts not recycled will be disposed of in an environmentally safe manner.

The four Japanese manufacturers in the American SCR market do not recycle spent catalysts. However, one of these manufacturers is also researching a catalyst recycling technique, but the process is currently uneconomical. In Japan, the catalysts are crushed, encased in concrete and landfilled, or the metal and ceramic constituents are separated and recycled as structural steel and/or concrete filler.

Any catalysts considered to be a hazardous waste must be disposed of in a Class I landfill. California has enacted strict legislation for regulating Class I landfills (California Health and Safety Code, Sections 25209 - 25209.7). For example, the treatment zone of a Class I landfill must not extend more than five feet below the initial surface and the base of the zone must be a minimum of five feet above the highest anticipated elevation of underlying groundwater (H & S Code, Section 25209.1(h)). The Health and Safety Codes also require Class I landfills to be equipped with liners, a leachate collection and removal system, and a groundwater monitoring system (H & S Code, Section 25209.2(a)). Such systems must meet the requirements of the California Department of Health Services (DHS) and the California Water Resources Control Board (H & S Code, Section 25209.5).

Owners/operators of Class I landfills are required to submit annual reports to the DHS which indicate that hazardous waste constituents are not threatening to pollute groundwaters or the vadose zone (H & S Code, Section 25209.4(b)(1)). The annual report must include "a sufficient number of soil core samples in, beneath, and surrounding the treatment zone." to detect hazardous waste constituents in concentrations which could pollute the vadose zone or waters of the state (H & S Code, Section 25209.4(b)(1)).

The procedures listed above and those required by the State of California should provide reasonable precautions against groundwater contamination from spent catalysts. The possibility of groundwater contamination is even further reduced due to the insoluble nature and form of the vanadium used, and the fact that spent catalysts are typically crushed and encased in concrete.

However, since no catalysts have actually been replaced and disposed of in California, the Department of Health Services (DHS) has not yet had to determine whether spent catalysts encased in concrete are to be classified as

hazardous wastes. According the DHS Waste Evaluation Unit, substances containing greater than or equal to 2,400 mg/kg of V_2O_5 , the regulatory limit for V_2O_5 , would require disposal in a Class I landfill. Since catalysts contain approximately 5 percent V_2O_5 (equivalent to 50,000 ppm) it would be a regulated hazardous waste requiring disposal in a Class I landfill.

There are at least two exceptions to the above statements regarding V_2O_5 disposal. As mentioned earlier, one type of catalyst has a metal structure onto which the catalyst is baked. According to the Waste Management Unit of DHS, a potentially hazardous waste, such as V_2O_5 , coated onto a metal structure would not be considered a hazardous waste. It is considered a metal waste, like copper pipes, for example, and, therefore, is not a regulated waste requiring disposal in a Class I landfill. Ceramic types of SCR catalyst reactors may require disposal in a Class I landfill, unless they can demonstrate that they are not friable or brittle.

One vendor of a ceramic type catalyst provided the District with information indicating their catalysts were not friable or brittle because they include a fiber binding material in the catalyst. In addition, "Ceramic catalyst components are calcified. As a result, ... past experience has shown that this type of catalyst is not friable or brittle. ...In addition, we believe the catalyst does not need to be disposed of in a Class I landfill, as it is not water soluble."

If it is determined that a catalyst does not require disposal in a Class I landfill, jurisdiction for its disposal then shifts to local agencies such as the regional water quality control boards or county environmental agencies. District staff contacted the Los Angeles Regional Water Quality Control Board to find out where a spent catalyst would be disposed. If a spent catalyst is not considered a hazardous waste by DHS and, therefore, does not require disposal in a Class I landfill, it would "probably" be considered a Designated Waste. A Designated Waste is characterized as a nonhazardous waste consisting of, or containing pollutants that, under ambient environmental conditions, could be released at concentrations in excess of applicable water objectives, or which could cause degradation of the waters of the state (CCR, Title 23, Chapter 3, Subparagraph 2522 (a)(1)). Depending upon its final waste designation, the spent catalyst would most likely be disposed of in a Class II landfill, or possibly in a Class III landfill if it has liners. Table 4-2 below gives the number of permitted and active landfills capable of handling Class II and Class III waste. There are a total of

71 landfills in the Basin that can handle both Class II and Class III wastes (Table 4-2).

TABLE 4-2
Number of Class II/III Basin Landfills
and Landfill Capacity

| County | Number of Landfills | Capacity tons/day |
|-----------------------|------------------------|----------------------|
| Los Angeles | 19 | 55,000 |
| Orange | 7 | 9,200 |
| Riverside | 14 | 2,500 |
| <u>San Bernardino</u> | <u>31</u> | <u>4,000</u> |
| Total | 71 | 70,700 |

Source: California Waste Management Board

Regarding the solubility of V_2O_5 , "Available physical/chemical information on most of these forms suggested limited solubility in water, and chemical stability except under strongly acidic or basic conditions," (Eschenroeder, et al., 1988). Several vendors contacted by the District indicated that the V_2O_5 used in their catalysts does not occur in pure form. Instead, it is mixed with clays and other substances to form complex, chemical compounds. One method of cleaning the SCR system is water or steam sootblowing. It is for this reason that the vanadium compounds used are water insoluble and should not present a water quality impact.

CUMULATIVE SOLID WASTE IMPACTS

It has been estimated that a total of 6,067 tons per year of catalyst would be required for all NO_x reduction rules for which SCR may be used to meet the specific rule requirements. "This projection is based on experience with gaseous fuel which indicates 500 pounds per year per megawatt of installed capacity served by SCR," (Eschenroeder, et al., 1988). The above estimate is based on the catalyst requirements for SCE's Huntington Beach

demonstration test of one SCR system. Eschenroeder, et al., (1988) claim that this estimate is based on an "optimistic figure of four years for catalyst life." However, according to the catalyst manufacturer, the above estimate may actually be based on project design conditions of a two year catalyst life. Both SCE (1988) and the vendor providing the catalyst used in the SCE demonstration test, have indicated that the actual life of the catalyst under normal operating conditions would be closer to four years or more as indicated by Eschenroeder, et al. (1988). However, the vendor indicated that if a four year catalyst life estimate is used, the actual amount of catalyst required would be 280 pounds per year per MW or less. Therefore, the actual amount of catalyst required per year would be approximately 56 percent of the above estimate, or approximately 3,398 tons per year. This figure may also be an over-estimate because units using natural gas, which is the primary combustion fuel used by affected units in the Basin, have a low particulate loading in the flue gas, which allows a finer pitch catalyst to be used. This results in a smaller catalyst volume enclosed in the reactor, thus reducing the catalyst weight requirement by as much as another 50 percent. The above estimate is also based on the incorrect assumption that all units affected by Rule 1146 would use SCR to meet the emission level requirements. Finally, the above catalyst requirement assumption that the NO_x emission level for Proposed Rule 1134 will be 9 ppm. However, if the District Board adopts the current staff recommendation of a 12 ppm NO_x emissions limit, most affected units will be able to meet the NO_x emission requirement using steam injection. The calculations below assume a worst case scenario, i.e. that the Board adopts the 9 ppm NO_x level for Proposed Rule 1134.

If facilities choose the most economical method of maintaining a high NO_x reduction efficiency with a low ammonia slip, then they would replace part of the catalyst on an annual or biennial basis. Assuming that facilities replace half of their catalyst reactor every year (a more accurate estimate would be replacing one fourth of the catalyst every year), then facilities would actually generate approximately 1,699 tons per year of spent catalyst.

According to vendors contacted by the District, Japanese catalyst makers supply catalysts for approximately 75 percent of the American SCR market. All of the Japanese vendors comprising the majority of the catalyst market stated that they would guarantee catalyst disposal, i.e., they would return spent catalysts to Japan for disposal. Therefore, the amount of spent catalyst that would need to be disposed of in the United States would be

approximately 425 tons per year. Currently, the major American SCR vendor retrieves their spent catalyst products and warehouses them at facilities outside the state of California, pending the development of a catalyst recycling program that they are currently researching. The American SCR vendor manufactures catalysts with a metal structure and, therefore, any spent catalysts could be disposed of in a Class II or possibly a Class III landfill.

The cumulative impact of catalyst waste disposal for all rules combined would result in less than a one percent increase in the total amount of solid waste that would have to be disposed of in the Basin. According to the California Waste Management Board, projects generating wastes greater than 10 percent of current total capacity are considered to be significant. Therefore, generation of an additional one percent per day in wastes would not be considered a significant impact.

ATTACHMENT 8

MITIGATION MEASURES

Introduction

INTRODUCTION

The mitigation measures identified in the December, 1988 EIR were not compiled at any one location in that document. Several comment letters also noted that the texts of mitigation measures in the December, 1988 EIR were too general to be effectively implemented.

This attachment compiles all mitigation measures identified in the December, 1988 EIR and contains revised language to ensure the measures contain action or performance statements. No new measures have been added and all measures have been abstracted from Chapter 4 of the December, 1988 EIR. Measures are compiled below in the order of topics evaluated in the EIR.

SECTION 4-1 AIR QUALITY

- 4-1-1 Control measures that call for substitution of reactive solvents by exempt solvents may create health hazards if the exempt solvents happen to be toxic but are not addressed in the Tanner process. In such cases add-on control devices, such as carbon adsorption, shall be used to effectively reduce toxic emissions. Carbon adsorption techniques shall also be considered in cases where there are serious concerns about auxiliary fuel consumption, NO_x emissions, or residual wastes from add-on incinerators. Hazardous waste impacts from carbon adsorption units shall be mitigated to the extent feasible by recycling.
- 4-1-2 FFC control measures may increase the need for solid waste disposal because of collected particulate matter. This shall be taken into consideration in the refinery waste management plan. Carefully controlled ammonia use shall be required to minimize ammonia slippage in SCR or SNCR applications for steam generators.
- 4-1-3 NO_x emissions due to operation of afterburners shall be reduced by using catalytic-type afterburners.
- 4-1-4 There may be ammonia (NH₃) slippage when selective catalytic reduction (SCR) is used. The rate of NO₂ injection necessary to

maintain high NO_x reduction while minimizing NH₃ slippage shall be sought in calibrating all SCR.

- 4-1-5 There is some concern that reduction of ammonia emissions may increase acid deposition in the Riverside and San Bernardino areas because of the neutralizing effect ammonia has on the acidity of precipitation. Reduction in SO₂ and NO_x should compensate for such effects, and no additional mitigation measures are necessary.
- 4-1-6 Potential adverse impacts from the methanol fuel program are being investigated by the District. Preliminary studies indicate that formaldehyde emissions from such a program can be mitigated below the permissible exposure levels. Mitigation measures to reduce any potential impacts below a level of significance shall be implemented as part of the methanol fuel program.
- 4-1-7 Some exempt solvents that are of low photochemical reactivity may be potentially toxic, in which case water-borne substitutes or non-solvent methods shall be used instead. Where such chemical must be used, special handling techniques shall be implemented to ensure no adverse health impacts.

SECTION 4-2 WATER QUALITY

- 4-2-1 Seasonal and temporal controls on construction shall be instituted to help minimize the amount of water needed to counteract fugitive emissions stirred up by wind action. Chemical soil and dust binders shall be used appropriately prior to construction to suppress particulate emissions. Conscientious construction management practices which minimize water requirements by avoiding water waste and runoff and by determining the optimal schedule for water application to achieve dust-binding results shall be implemented as local building permit requirements.
- 4-2-2 The shortfall in available water supplies can be partially offset by aggressive water conservation measures such as low-flow plumbing fixtures in all homes, low-water landscaping, and drip irrigation. Wastewater reclamation can also provide additional water supplies, especially for landscaping and industrial purposes. Water conservation and reclamation measures shall be implemented as possible by local agencies.

ATTACHMENT 8 MITIGATION MEASURES

- 4-2-3 Exploration and production platform operators shall control the quality and volume of the wastewater they discharge through on-site pretreatment and strict housekeeping practices to avoid spoils of untreated wastewater.
- 4-2-4 On-site treatment of liquid wastes left over from cleaning the carbon adsorbers shall be conducted to reduce the amount and toxicity of hazardous liquid waste and to reduce the possibility of water contamination.
- 4-2-5 Pretreatment of recycling water used in these "sweetening" processes shall be conducted to reduce the volume and toxicity of waste water, and thereby reduce the risk of water contamination.
- 4-2-6 Refiners shall be encouraged to use a desulfurization process that generates the minimum feasible liquid waste. Waste waters resulting from desulfurization shall be treated on-site to reduce the possibility of contamination, and then recycled or discharged to the sewers.
- 4-2-7 No mitigation is needed for the positive impacts identified above.
- 4-2-8 Operators shall be required to use storage tanks and pipes constructed only with non-corrosive materials. Regular monitoring for tank leaks will guard against soil contamination that could lead to deeper groundwater pollution.
- 4-2-9 No mitigation is necessary.
- 4-2-10 Operators shall take caution to match reformulated pesticides with the best available application methods to achieve minimum emissions.
- 4-2-11 Any potentially negative side effects of watering compost piles shall be minimized through careful housekeeping practices and periodic monitoring by operators and the Regional Water Quality Control Board.
- 4-2-12 Aggressive water conservation (e.g., low-flow plumbing) can reduce the amount of waste water entering the sewage treatment system, thus optimizing the use of available plant capacity and minimizing the need for new treatment works. At industrial sites, on-site treatment of waste water can convert some effluent for reuse. Package plants that are not part of publicly owned treatment works may provide

additional wastewater treatment capacity at the developer/owner's cost for primary treatment. However, in order to discharge treated water into navigable waterways, treatment facilities must obtain National Pollutant Discharge Elimination System (NPDES) permits and comply with the conditions of the permits, including annual treatment capacity. Such water conservation measures shall be required for all project approvals by local agencies.

- 4-2-13 The use of disposable carbon units, which could decrease the amount of waste water generated during steam cleaning, shall be implemented whenever feasible.

SECTION 4-3 PLANT LIFE

- 4-3-1 Local jurisdictions shall conserve sensitive environments by preserving these areas or by revegetating excavation surface areas with local native plants when approving or amending their general and specific plans. Agricultural land shall also be considered for preservation through regulatory controls, incentive measures, and direct local jurisdiction expenditures. An alternative mitigation would be to relocate some agricultural uses to areas which are not suitable for intensive urban land uses.

SECTION 4-4 ANIMAL LIFE

- 4-4-1 Local jurisdictions shall consider the impacts on sensitive animal species when approving new construction and development. Every attempt shall be made to preserve significant animal habits.

SECTION 4-5 NOISE

- 4-5-1 Temporary increases in noise levels associated with construction of new developments shall be minimized by: 1) restrictions on hours of operation; 2) control and design of traffic flows of trucks and other construction-related vehicles in route to or from construction sites; and 3) provision of temporary screening measures where construction activity on parcels of land is in proximity to existing residents.
- 4-5-2 If airport noise is found to be a problem, mitigation measures shall be implemented. One method of reducing the noise impacts at airports

is to construct a wall or noise-barrier. The barrier should block receptor uses from line-of-sight of the noise source and must not have any gaps that would allow the noise to leak.

- 4-5-3 Permanent or ambient noise consists of the all-encompassing noise within a given environment. Some examples include noise generated from traffic flows, industrial activities, and residential and non-residential uses in the community. For the most part, the impact of noise intrusion can be mitigated through the use of site design by insulating houses and buildings along freeways and busy streets; screening highways with trees or walls; land use planning for property bordering on heavily travelled roads; and using easements and adequate setbacks. These measures, coupled with active enforcement on the part of State agencies along with city and community ordinances controlling community noise, would provide the reduction of unnecessary noise, and shall be implemented whenever possible.

SECTION 4-6 LIGHT AND GLARE

- 4-6-1 Considerations shall be made in urban development design to minimize lighting in reflective structures and surfaces and to minimize reduction of access to sunlight by shade and shadow from buildings. As in the case of wind turbines, consideration shall also be given to siting communities and developments around these power-generating sources by providing buffer zones and landscaping for increased shade.

SECTION 4-7 LAND USE

- 4-7-1 Local governments shall address the need for local work centers through general plan amendments or zoning changes intended to identify appropriate sites for these facilities. Several adjacent cities could join together to designate sites to minimize the need for duplicative plan and zone changes, and to insure efficient siting of facilities. Communities with few "information" workers could establish appropriate land uses and zoning to attract developments

that would, in turn, attract a different mix of household incomes and employment opportunities to the jurisdiction.

- 4-7-2 Local general plans shall be revised and amended to address the land use requirements and impacts of new transit routes, parking limitations, and designated HOV lanes. Caltrans should update and expand its plans for park-and-ride lot development to address greater demand in areas feeding major commercial/industrial centers that are already heavily impacted by parking restrictions.
- 4-7-3 Local land use plans will provide the most effective mechanism for anticipating, controlling, and limiting the land use impacts caused by shifting expected future job and housing growth from one area to another . General plan amendments shall be approved and implemented to insure that adequate land is available to accommodate either more homes more jobs at a desirable density.
- 4-7-4 Local land use plans that encourage balanced housing and commercial development can help avoid creation of job-poor bedroom communities in areas opened to development by the new routes. Likewise, development plans for job-rich urban areas receiving improved access should include sufficient housing to avoid exhausting all of the increased capacity with commuter trips.
- 4-7-5 Negative local land use impacts shall be mitigated by routing high speed rail away from residential areas. Advance local land use and zoning adjustments can also prepare communities for the arrival of a high-speed rail corridor with minimum disruption to local use authorities can result in stations sited in a manner that will minimize land use disruptions and allow for an orderly transition to compatible commercial and industrial uses in surrounding areas without widespread displacement of homes or businesses.
- 4-7-6 Maximum efficient use of existing corridors and power plants will be the most effective mitigation measure. Expansion of existing corridors and plants where possible will avoid introducing energy transmission impacts to new areas.
- 4-7-7 Advance coordination of local land use planning efforts can minimize land use impacts by identifying and preserving land needed for future energy corridor expansion. Cooperation among counties, affected

cities, and energy companies will be needed. Local jurisdiction shall avoid land use conflicts by incorporating new corridors, plants, and associated land buffers into their general plans in advance of their development.

- 4-7-8 Improvements in transmissions lines and storage efficiency would also help mitigate the effects of increased electrification by enabling existing corridors to better handle additional energy demand.

4-8 NATURAL RESOURCES

- 4-8-1 Local jurisdictions shall help counteract the incentive to develop open spaces or agricultural land by making attempts to preserve these uses, as well as by establishing policies such as in-filling and mixed land uses which use existing developed land more efficiently.
- 4-8-2 Overall development policies and zoning decisions can be tailored to more effectively accomplish the goals established in the General Plan. In addition, increased awareness of the air quality impacts of land use decisions at both the local and regional level can help to coordinate land use decisions between jurisdictions.
- 4-8-3 Decreased combustion of fossil fuels results in a positive impact on the environments and preserves fossil fuel resources. No mitigation action is required
- 4-8-4 The impacts resulting from coal used to generate electricity shall be mitigated in part by use of BACT and off-set requirements. THE EPA and other states have guidelines and regulations to ensure that significant adverse impacts are mitigated.
- 4-8-5 In order to help conserve coal resources, electricity conservation programs and more efficient coal-to-methanol processing techniques should be pursued. Development of solar and wind energy for electricity generation are also alternatives to the use of coal.
- 4-8-6 More efficient residential and commercial appliances and processes will help mitigate some of the impact of increased demand for natural gas, and shall be required of new development whenever feasible. Use of coal as an alternative feedstock for processes that use natural gas, such as methanol production, can also help mitigate the depletion of natural gas supplies.

- 4-8-7 Timber cutting practices can be altered to provide a sustained yield from forests, instead of engaging in clear-cutting and slow regeneration of forests. Such methods are likely to raise the price of lumber, making housing more expensive. However, increased lumber prices also serve as an incentive to use lumber more efficiently in construction. AQMP measures which increase housing density may reduce lumber usage in housing construction, as when, for example, townhouses with common walls instead of detached single-family dwellings are constructed. Use of other materials such as stucco and brick can also decrease the amount of lumber required in construction.
- 4-8-8 Local and state governments shall stimulate recycling efforts by such methods as increasing refuse collection fees and establishing local recycling centers. Out-of Basin markets for recycled paper, including international markets, could also be located in the event that Basin paper manufacturers were forced to close by enactment of more stringent emission standards.
- 4-8-9 Renewable energy production is a mitigation measure for the environmental impacts of energy production from conventional sources. Daytime glare impacts of solar panels may be an unmitigable impact, since exposure of the panels to the sun is necessary and since their surfaces must be smooth and planar, and hence highly reflective. However, these installations will be relatively small, and their small size and wide spacing among structures may make this impact less than significant. For utility-sized solar electric generating facilities, landscaping with tall trees that reduce glare impacts on the immediate vicinity shall be planted whenever feasible. Land where solar electric generating facilities are sited may also support other compatible uses such as storage or agriculture. The state of California has a certification program for contractors and installed equipment. This program is strict and is expected to reduce any impacts from equipment failure below a level of significance.

SECTION 4-9 RISK OF UPSET

- 4-9-1 Impacts from add-on control devices shall be mitigated by strict enforcement of design, operation, and maintenance standards. Applicants or operators of these devices must comply with the requirements of various regulatory agencies, including District BACT

requirements. Impacts from these sources can be reduced to insignificance through regular inspection, monitoring, and good housekeeping.

- 4-9-2 Impacts from vapor recovery systems shall be mitigated through strict enforcement of design, operation, and maintenance standards. Applicants or operators of these devices must comply with various agencies' regulatory requirements, including the District's BACT requirements. Impacts from these sources will be mitigated to insignificance through regular inspection, monitoring, and good housekeeping. In addition, the Occupational Safety and Health Administration acts to protect worker health by promulgating regulations.
- 4-9-3 SCR storage and disposal impacts on hazardous waste disposal shall be mitigated by strict enforcement procedures, maintenance of operating manuals, and compliance with various agencies' regulatory requirements. Waste minimization shall be encouraged to reduce the impacts of waste disposal and storage. Also, on-site treatment and handling shall be encouraged as part of waste management practices. Therefore, to enhance proper facility design and operations, operators must comply with established regulatory standards.
- 4-9-4 Since no catalysts have been replaced and disposed of in California, the Department of Health Services has not yet determined whether spent catalysts encased in concrete should be classified as hazardous wastes. Therefore, it is uncertain whether spent SCR catalysts crushed and encased in concrete need to be disposed of in a Class I landfill.
- 4-9-5 County hazardous waste management plans are revised on a triennial basis and should take any changes in the quality or composition of hazardous wastes into account during the revision process. These revisions are currently under way and stress conservation, waste-stream reduction, and recycling. Potential increases in landfill demand may constitute a significant adverse environmental impact. Mitigation of this impact is within the jurisdiction of the local government solid waste planning agencies, not the District's. Mitigation measures on landfills and landfill planning can and should be adopted by those agencies. It is expected that effective solid and hazardous waste

management programs will reduce the impacts from this source to insignificant levels.

- 4-9-6 To reduce exposure to methanol, OSHA (1978) recommends engineering controls to reduce environmental concentrations to permissible exposure levels (PEL). Respirators shall be provided in case PEL levels are exceeded. In addition to respirators, a complete respiratory protection program should be instituted which includes regular training, maintenance, inspection, cleaning, and evaluation. Employees should be provided with and required to use methanol-impervious clothing, gloves, face shields, and other appropriate protective clothing and materials necessary to prevent repeated or prolonged skin contact with liquid methanol. Emergency showers and eye-wash fountains should be installed in case of skin or eye contact with methanol. To reduce the possibility of fires or explosions, all transport and storage containers should be insulated against exposure to external heat sources.
- 4-9-7 The requirements for assuring safe operation of a methanol-fueled facility are more stringent than those for a petroleum-based liquid fueled facility, but similar to those of a natural gas-fired facility (Shore and Bemis, 1986). In a field test demonstration of methanol in an industrial-sized gas turbine cogeneration unit (Shore and Bemis, 1986), the safety system for distillate fuel was upgraded to include vapor and fire detectors in the engine room and improved ventilation of the turbine enclosure. In the event of a leak of fire, this safety system could initiate an engine shutdown. Methanol is corrosive so the materials of construction (for tanks) were carbon steel up to the fuel forwarding filters and stainless steel thereafter. Seals and gaskets used throughout the system were constructed of Buna-N, teflon, nitrile rubber, or other methanol-compatible material. Welded connections were used preferentially in the piping system if possible.
- 4-9-8 Methanol has a low flame luminosity rating which can create a potentially dangerous fire hazard. Additives such as pentane can be used as flame colorants to increase the visibility of methanol flames (DOE, 1982). Addition of flame colorants will speed the detection of any methanol fires.
- 4-9-9 Transport of methanol by rail requires non-corrosive tank car linings to prevent leakage and thus reduce the possibility of explosion and

fires. Properly attached bumpers or chassis extensions on all tank cars will protect them and other equipment from severe damage in the event of a collision. Posting warning signs explaining contents and hazards, as required by the Code of Federal Regulations (CFR, 1986), can alert individuals and facilities that transport or store methanol.

- 4-9-10 Use of proper storage and handling techniques, particularly in the case of self-fueling stations, can help mitigate any risk presented by natural gas use. Because the gas disperses quickly into the atmosphere, there are no long-term impacts on the environment which need to be mitigated.
- 4-9-11 LPG is considered by the EPA to be a nontoxic gas; however it is considered hazardous because it is flammable. "LPG is considered a safe motor fuel, by the Federal government." (WLGA, 1988). LPG, under normal atmospheric pressure, is not water soluble. Therefore, LPG released as a gas would not affect groundwater supplies. LPG vehicle tanks are tested to four times their normal operating pressures and are 20 times as puncture-resistant as other types of fuel tanks. As compared to other types of clean fuels (for example, methanol, ethanol, and CNG), LPG has the lowest flammability range (2.4 to 9.6 percent), which is one safety advantage. Methanol, for example, has a flammability range of 6.7 to 36.0 percent.
- 4-9-12 Particularly important in reducing accidental releases of LPG are preventative maintenance on the equipment and observing proper safety practices in handling such equipment and the LPG itself. As with other types of hazardous substances, LPG is strictly regulated by existing codes and regulations. The most important standard for LPG equipment is the American National Standards Institute code (ANSI). This standard has served as the guide for the Occupational Safety and Health Administration standard 29 CFR. Transport of LPG is covered by DOT regulations 49 CFR Part 173
- 4-9-13 To protect critical body areas that are the most vulnerable to LPG, the National Institute for Occupational Safety and Health and the Occupational Safety and Health Administration (NIOSH/OSHA, 1981) and the Department of Transportation (1984) require that proper clothing, including goggles and rubber or plastic gauntlet gloves impervious to LPG, be worn. ANSI also recommends that the following safety and protective equipment be made available at each

location having an LPG installation: hooded ventilation, safety showers, respiratory devices, and rescue harnesses. All safety equipment should be located in the vicinity of storage and transport containers to protect against accidental spills or leaks.

4-9-14 LPG storage tanks can be installed above-ground or below-ground, although most tanks are installed above-ground. New design specifications for hazardous material storage tanks were recently published in the Federal Register (September 23, 1988). In California, design specifications for storage tanks (which are more stringent than the Federal regulations) are found in the California Administrative Code Title 8, Chapter 4, Subchapter 1, Unfired Pressure Vessel Safety. Local fire departments may also have specific regulations that govern LPG tank installations.

4-9-15 In order to mitigate impacts caused by reformulation using exempt solvents, adequate studies will be necessary to properly identify the effects of compounds used in reformulation of solvent and coatings. Strict regulatory practices coupled with material and products compliance must be maintained in addition to good housekeeping practices. Manufacturers must prepare and maintain material Safety Data Sheets (MSDS) with cautionary notes informing the user of potential risks associated with the use of the product. This requirement is in compliance with the provisions of Title III (the Federal Emergency Planning and Community Right-to Know Act of 1986). In addition, each manufacturer must comply with section 313 of the Clean Air Act to establish an inventory of toxic chemical emissions from its facility.

4-9-16 These steps will protect public health and safety, and would therefore mitigate adverse environmental impacts which might be caused by exposure to hazardous or toxic materials from coating reformulation.

SECTION 4-10 POPULATION

4-10-1 The selective impacts of telecommuting could be distributed more evenly throughout the Basin population by extending such programs to as varied a pool of jobs as possible. Also, increasing the percentage of employees involved would further spread the benefits. However, this must be balanced against the as yet unknown population from employment constraints on residential location.

- 4-10-2 Neighborhood disruption shall be minimized through careful transit route and transfer point designation, along with provision of adequate bus turn-outs and bus shelters/seating to discourage patrons from disturbing nearby private property. Transit companies should increase the security on buses and shelters/transfer points.
- 4-10-3 The Regional Housing Needs Assessment, as incorporated into local general plan housing elements, can assist in distributing housing and population shifts fairly among all of the jurisdictions impacted by growth management, so that a small handful of communities do not drastically gain or lose population. Region-wide and local infrastructure and service plans should also anticipate changing user needs as a result of population and density shifts prompted by jobs/housing balance efforts. Local government obstacles to jobs/housing balance such as land use plans or zoning codes that exclude employment-generating activities, or revenue-maximizing land use decision-making that excludes residential uses, should be removed.
- 4-10-4 Displacement of population due to freeway construction shall be offset by required housing replacement programs within the affected community. Population densities in urbanized areas receiving increased access, and population distribution in urbanizing areas receiving new access, can be influenced indirectly by the Regional Housing Needs Assessment (RHNA) developed by the Southern California Association of Governments. The RHNA can assist in spreading population growth equitably within the region by guiding the provision of a mix of housing for all income levels.

SECTION 4-11 HOUSING

- 4-11-1 Disincentives to produce low income and affordable housing under the "Mitigation Strategy" should be offset by the development of fee waivers, or by providing affordable housing incentives in locations more desirable from a jobs/housing balance point of view. Disincentives posed by the "Regulatory Strategy" can be reversed by subsidies for affordable and low income units, special density bonuses, or fee waivers for qualified projects.
- 4-11-2 Housing impacts associated with the "Investment Strategy" can be ameliorated by special consideration of affordable and low income

projects, and/or reduced infrastructure fees. The negative impacts on low and moderate income housing due to growth control shall be offset by vigorous implementation of the RHNA through local general plans.

4-11-3 Housing losses due to freeway construction can be offset by housing replacement and relocation programs in adjacent areas. Selection of alignments shall consider alternatives that will result in the minimum number of units and neighborhoods being subject to disruption by the new facilities.

4-11-4 Low interest loans, cash rebates, or tax credits can overcome financial barriers to compliance with the proposed measure. California's original Weatherization Financing and Credits Program was discontinued in March, 1986, but a similar program could be revived. In addition, utility-sponsored weatherization audits can assist homeowners in identifying the most cost effective means of conserving energy.

4-12 TRANSPORTATION

4-12-1 Selection of appropriate routes for electrification shall be conducted with full coordination among local planning agencies and transit providers. In some cases, this may require new route configurations to avoid conflicts with sensitive land uses and to generally avoid burdening neighborhoods with more intense traffic. Parking and traffic enforcement, particularly during peak hours, can also alleviate some of the added congestion that could occur.

4-12-2 Earmarking sufficient funds at the federal, state, and/or local level will help ensure that transit operators can systematically convert their fleets to clean fuels without sacrificing route expansion and other service improvements to increase efficiency and convenience.

4-12-3 No mitigation measures are required.

4-12-4 Registration limitations that focus on geographic areas that offer good transit service could help ensure that vehicle reductions translate into fewer trips, particularly during peak hours. Strong enforcement programs could improve compliance and limit the number of illegally

registered vehicles that could prevent significant congestion relief from occurring. "Clean Fuel" vehicles could be exempted from registration limitations thus encouraging a shift to low emission vehicles. However, this mitigation would result in smaller VMT reductions.

- 4-12-5 Improved local transit service can assist in controlling growth in non-work trips that might otherwise occur on free days or as a result of more flexible hours. Local governments and employers may be able to offer incentives such as affordable housing and convenient local work centers to encourage employees to consider jobs/housing balance in their location decisions despite the reduced need to travel to the work base. In addition, local land use plans can provide for adequate bicycle and pedestrian options for short work trips, as well as mixed residential and commercial development.
- 4-12-6 In order to reduce employee resistance to using alternative modes of travel, they should be made as attractive as possible, with more convenient transit and ridesharing options, and with the need to transfer or wait eliminated to the greatest degree possible. Financial motivations in the form of "parking rebates" or employer-paid transit passes can also ease resistance.
- 4-12-7 Multi-tenant buildings or employers that find ridesharing matches difficult to achieve due to flextime incompatibilities can improve the potential for matches by joining a transportation management association that joins the employees of many businesses.
- 4-12-8 Less urbanized portions of the Basin could be exempted from this measure, as parking restrictions would be ineffective if supply is not at or near absorption. Further, loss of auto access can be handled most directly by local land use plans that establish where parking should be located and how it should be distributed.
- 4-12-9 No mitigation measures are required.
- 4-12-10 No mitigation measures would be required.
- 4-12-11 The perceived inconvenience of travel to major activity centers by alternative modes can be ameliorated by readily available park and ride lots, express transit service to eliminate inconvenient transfers,

and event and work schedules that allow flexibility for using public transit. An overall increase in transit service would be the major antidote to perceived inconvenience.

- 4-12-12 Construction scheduling and implementation of HOV facilities shall be planned to result in the minimum disruption to local traffic. Such scheduling and implementation can include seasonal and time-of-day variations to avoid peak travel periods to the degree possible.
- 4-12-13 Transit providers and local planning agencies can work together to designate routes that will minimize neighborhood disruption.
- 4-12-14 Negative impacts caused by this measure can be reduced by designating sufficient alternative bypass routes around the most urbanized portion of the Basin, and by minimizing the peak hour restrictions to the smallest time span possible. In addition, improved truck accident response efforts can help compensate for any increase in truck accidents and attendant delay along these bypass routes. Coordinating truck delivery schedules can further reduce truck accidents and congestion in areas experiencing heavy truck activity.
- 4-12-15 Negative transportation impacts can be reduced by interjurisdiction cooperation to synchronize signalization and to coordinate routes to be synchronized. Coordinated traffic signals and other controls on streets adjacent to synchronized routes can eliminate many spillover effects.
- 4-12-16 No mitigation measures are necessary.
- 4-12-17 Route extension construction shall use construction management and shall schedule during off-peak hours to minimize physical and visual distractions to airport traffic, as well as to other local traffic. Long-term traffic effects on adjacent land uses can be controlled by limited access, signs, parking restrictions, signalization and enforcement of traffic laws, and local land use and zoning regulations designed to improve compatibility with airport traffic and uses.
- 4-12-18 Disruption to local and train traffic due to construction of new tracks and grade separations can be mitigated by off-peak and phased construction schedules, appropriate detours, and additional traffic enforcement on affected streets.

- 4-12-19 Long-term mitigation of the impacts of more intense train traffic along a single corridor can be addressed over time through compatible land use designations and zoning in local plans. Long-term surface street traffic delays can be eased by physical improvements such as increasing the number of grade separated intersections, as well as by transportation management such as limiting the length of trains and resultant train delays, and restricting train delays to off-peak hours.
- 4-12-20 By paving, and therefore formalizing, parking areas, this measure may increase parking in locations that conflict with the intent of parking management controls proposed in measure 2-B.
- 4-12-21 This can be mitigated through local land use planning and zoning to control the amount and location of parking available.
- 4-12-22 Short-term freeway construction impacts could be alleviated through careful phasing, off-peak work schedules, designation of appropriate detours, and increased traffic enforcement on impacted surface streets. Long-term traffic intensity adjacent to the new routes can be offset by compatible local land use designations and zoning controls, as well as by appropriate land buffers, signalization, traffic enforcement, and appropriate signs.
- 4-12-23 Traffic disruption due to high speed rail route construction can be minimized by construction phasing, scheduling work during off-peak periods, designation of appropriate detours, and increased traffic enforcement in the affected area. In the long-term, traffic disruption at intersections along the line can be reduced or eliminated by building grade separated crossings and minimizing the number of crossings through street closures and route alignment. Increased traffic intensity in and around rail stations can be alleviated by implementing parking management, increasing transit access, synchronizing signals, and providing increased traffic enforcement.
- 4-12-24 The demand for new routes can be controlled to some degree through interjurisdictional cooperation to ensure that job growth is distributed to areas most able to accommodate it. Increased local traffic due to new job growth can be offset by simultaneous provision of transit alternatives and ridesharing incentives, and transportation system

management techniques including signal synchronization and parking management.

- 4-12-25 Negative impacts due to increased train traffic can be addressed by consolidating rail lines to the degree possible so that fewer surface streets and fewer intersections are affected by railroad crossings. Crossing delays and safety concerns can be ameliorated by grade separations at affected intersections as detailed in proposed measure 10, Rail Consolidation. Further, train traffic could be curtailed during peak hours to minimize crossing delays that would exacerbate commuter traffic and increase safety problems.
- 4-12-26 Negative short-term impacts due to constructing electrified highway facilities can be mitigated with construction phasing, scheduling away from peak hour traffic, designating appropriate detours, and increasing transit alternatives and service during the construction period.
- 4-12-27 Short-term negative impacts associated with installation of electrified lines can be mitigated through the phasing of improvements. Rail cars can be diverted to alternate lines, where available, or rescheduled outside of construction hours. Surface street traffic can be mitigated by scheduling construction during off-peak hours, providing appropriate detours and surface traffic enforcing for the duration of construction.

SECTION 4-13 PUBLIC SERVICES

- 4-13-1 Adequate public notice of the establishment of parking management and auto restriction zones, supplemented by clear, permanent public signage will help educate motorists to avoid these areas unless they qualify for access. This will relieve the need for additional police personnel to inform and direct motorists. Strong enforcement measures, including fines and towing, will emphasize the importance of parking and access restrictions and deter potential violators, which will minimize the number of officers needed for enforcement activities.

ATTACHMENT 8 MITIGATION MEASURES

- 4-13-2 To mitigate the potential for hazardous waste emissions, proper handling, storage, and disposal methods should be observed.
- 4-13-3 Rail transport of wastes should be relied on whenever possible to ease the impact on traffic safety and congestion. Reluctance to site disposal facilities in jurisdictions outside the Basin can be alleviated by advantageous facility financing and tipping fees that generate local revenues.
- 4-13-4 Where possible, industries discharging industrial waste water should alter processes to reduce the amounts of hazardous liquid wastes generated.
- 4-13-4 Proper handling, storage, and disposal methods should be observed in order to mitigate the potential for adverse impacts.
- 4-13-5 Implementation regulations should direct refineries to select the lowest waste-generating desulfurization method available.
- 4-13-5 Livestock waste should be reused for energy-generating purposes to the maximum extent possible, to reduce the amount requiring disposal.
- 4-13-6 Local jurisdictions should help ensure the proper type and amount of waste disposal facilities and services by coordinating with collection agencies and jurisdictions that provide landfill capacity.
- 4-13-7 Local jurisdictions and school districts should cooperate to plan in advance for anticipated enrollments and needed facilities. Additional state or local funding would ease the problem of land acquisition for new school sites in urban building grade separated crossings and minimizing the number of crossings through street closures and route alignment. Increased traffic intensity in and around rail stations should be alleviated by implementing parking management, increasing transit access, synchronizing signals and providing increased traffic enforcement.
- 4-13-8 To the extent that more efficient use can be made of existing District personnel, a part of this impact may be mitigated. Additional staff and equipment could be added to the District's budget to deal with the remaining workload increases.

SECTION 4-14 ENERGY

- 4-14-1 Load management and energy conservation measures should be used to help limit the amount of electricity required. However, these techniques will probably not be sufficient to allow the demand for electricity to be met by in-Basin resources.
- 4-14-2 Greater coordination between the Basin's electric utilities, local jurisdictions, and regulatory agencies will be required to ensure that additional generating capacity is added to permit timely implementation of the electrification strategy.
- 4-14-3 If paper recyclers relocate outside the Basin rather than shut down, this impact would be mitigated. However, increased truck or rail travel would result from transporting newspaper for recycling out of the Basin and transporting finished paper goods into the Basin. The extent to which the increased travel results in emissions depends on the degree of implementation of the electrification and clean fuels measures for goods transport. Under another scenario, complying Basin paper recyclers would expand to replace the capacity lost when other recyclers close. The negative environmental impacts would thus be avoided. Alternatively, newspapers could be shipped to foreign markets for recycling.
- 4-14-4 Energy-efficient afterburner design and waste heat recovery could decrease the demand for combustible fuels, thus decreasing both air pollutant emissions and the amount of energy consumed.
- 4-14-5 On a more macroscopic scale, load management techniques can help manage the existing energy supply more efficiently, and should be implemented whenever possible.
- 4-14-6 This impact could be mitigated by methanol fueling for IC-powered cogeneration. However, considerations such as methanol fuel costs and retrofit costs may make IC-powered cogeneration economically infeasible. A further alternative is the use of external combustion engines such as the Stirling engine. External combustion engines burn fuel in the open air, achieving more complete combustion and burning at lower temperatures. These features allow external combustion

- engines to operate with inherently lower levels of hydrocarbon and NO_x emissions (Source: Waste-By-Rail-Study, SCAG, 1988).
- 4-14-7 Railroads have the potential to avoid peak hour electricity demand by scheduling trips off-peak. Although this will not decrease the overall railroad demand for electricity, it will make more efficient use of existing power plants.
- 4-14-8 Continued advances in power storage technology, such as superconducting magnetic energy storage (SMES), will help reduce the peak hour electricity demand.
- 4-14-9 The development of methanol/fuel cell electric vehicles could reduce the dependence of vehicles on batteries and cut nighttime peak demand. Also, to the extent that other control measures promote less driving, less energy will be required overall.
- 4-14-10 The degree to which the current fuel distribution system would need to be adapted depends on the type of fuel ultimately used. Increased industrial use of natural gas does not require mitigation because, for the most part, the distribution system already exists. However, increased use of natural gas to power vehicles would require special fuel tanks and different handling techniques. Increased consumer education and awareness, such as was seen in the use of vapor recovery units at fueling stations, would help mitigate impacts associated with the changeover to alternative fuels
- 4-14-11 Subject to further testing, the use of closed-loop vehicles equipped with "adaptive learning" can reduce NO_x emissions. Properly functioning vehicles with adaptive learning continuously adjust their open-loop fuel calibrations and compensate, at least partially, for fuel-caused enleanment. These vehicles are expected to have lower exhaust NO_x and HC reductions from oxygenated blends than earlier closed-loop vehicles.
- 4-14-12 Studies need to be performed to determine overall ROG impact. Modeling studies are needed to determine the effect of increased NO_x emissions. The significance of impact or adequacy of mitigation cannot be estimated at this time due to areas. Developer fees and land donations as a condition of project approval also help provide school sites in both urban and urbanizing areas.

- 4-14-13 As methanol use in the Basin increases, rail tank car delivery should be augmented or replaced by vessel and barge deliveries. If the sales volume of methanol increases substantially, utilities should explore the feasibility of delivering methanol by pipeline. Pipelines, because of their substantial economies of scale, can be a very inexpensive means of transporting large quantities long distances (D'Eliscu, 1987). In addition, spills or leaks from a pipeline would have a less detrimental environmental effect than oil spills from tankers. The rapid disposal, dilution, evaporation, and biological degradation of methanol in both aquatic and terrestrial habitats minimize the impact on living systems. Soil penetration and aquifer involvements are minimal concerns with methanol production (D'Eliscu, 1987).
- 4-14-14 In the short- to mid-term range, fully dedicated and well optimized NGVs will be relatively clean, inexpensive, and high performing. Long-term options are not probable or feasible because fossil natural gas is a finite resource and contributes to net CO₂ production when burned, although less than does petroleum. SNG from coal is environmentally unattractive, and would contribute to more production of CO₂ than would the use of natural gas. SNG from wastes and crops is a renewable resource, and would not contribute net CO₂, but the waste resource is relatively small, and the crop resource may be limited by soil erosion concerns. SNG from biomass and coal is relatively expensive.
- 4-14-15 The recovery, refining, and distribution of natural gas generally would be cleaner than the manufacturing and distribution of gasoline or methanol. Emissions from NGVs, with the exception of NO_x, are generally lower than the emissions from gasoline vehicles. The low reactive hydrocarbon content of NGV exhaust suggests that NGVs would contribute less smog formation than gasoline and perhaps methanol vehicles.
- 4-14-16 Noticeable problems with NGVs are the composite placement of CNG tanks, lock-up time, and boil-off behavior of LNG tanks. These are the key factors in determining the acceptability of NGVs to buyers. Progress is on the way with advanced-technology CNG tanks. They are much lighter than the older US DOT all-steel tanks, thus reducing CNG-tank weight problems. Nonetheless, storage at higher pressure, sometimes 4500 psi, improves the volumetric density, but

- bulk still remains a problem (they are at least twice as bulky as methanol tanks).
- 4-14-17 Comparatively, LNG may be a more attractive option. Boil-off losses from LNGVs could be minimized and rendered harmless, perhaps at reasonable cost. LNGV tanks could be comparable in weight and bulk to methanol tanks.
- 4-14-18 LNGVs and CNGVs would perform roughly as well as gasoline vehicles. But the lighter LNGV, with its colder fuel, would perform slightly better than the CNGV.
- 4-14-19 The environmental assessment of impacts of natural gas suggests that in the short- to middle-term, NGVs would be preferable to gasoline and methanol vehicles. Beyond the middle-term, efforts in research must be advanced to innovate more efficient and environmentally safe alternative fuels for long-term use.
- 4-14-20 Because LPG is extracted in the normal refining process of the major hydrocarbon fuels, it requires no new type of, or additional, refining plants. The refining infrastructure is already in place. To establish a widespread distribution network would require an estimated capital investment in excess of \$7.5 billion. For this reason, and the reasons explained above, LPG tends to be more suitable for "niche markets" (DOE, 1988) such as fleet operations where vehicle range and/or load carrying capacity are not limiting factors and where fuel can be purchased at relatively low cost in commercial-level quantities.
- 4-14-21 In order to significantly reduce the peak load capacity that would be required for vehicle electrification, battery charging should be restricted to off-peak hours. Continuation of Tier I and II transportation control measures which reduce the number of vehicle trips made and the vehicle miles travelled (VMT) could also help mitigate the impact on the energy demand. Also, improvements in electrical vehicle performance could reduce the energy demand.
- 4-14-22 Increased efficiency of industrial processes can help mitigate some of the impacts from increased demand for natural gas. For the transportation sector, measures developed to decrease vehicle emissions by reducing travel distance and frequency will also help

decrease the demand for natural gas because less energy will be required.

- 4-14-23 If petroleum distillation were to continue, fuels refined here should be transported by tanker or pipeline and sold outside the Basin. To the extent that Basin consumption represents imports from outside the Basin, this out-of-Basin production could be diverted to other markets.

SECTION 4-15 UTILITIES

- 4-15-1 There are three main groups of measures which can mitigate the impacts of out-of-Basin power plant and transmission line construction: conservation measures, load management measures, and out-of-Basin sources of supply.
- 4-15-2 From 48 to 61 percent of the electrification strategy's daytime power and capacity needs, or 60,500 GWh/yr and 4,400 MW, could be offset by energy conservation measures. Three-quarters of this amount would result from local government energy conservation programs, waste recycling, and incentives such as pricing, taxes, and subsidies included as control measures in the Plan (AQMP Appendix IV-G). The remaining 25 percent would come from other efforts, including those of utilities.
- 4-15-3 Utility load management programs can also reduce significantly the need for generating capacity additions. These programs include thermal energy storage, equipment purchase incentives, and reduction of peak use through conservation.
- 4-15-4 Load management measures, which even out the demand for electricity over the day, make more efficient use of transmission lines and generating plants. To the extent that new electricity demands, such as vehicle charging, can be shifted to off-peak times, the capacity of existing transmission lines is not exceeded, and new ones need not be built.

- 4-15-5 New residential and commercial construction should be designed with charging needs in mind. For example, new multi-family dwelling complexes could have a lockable electrical outlet at each parking space connected to the tenant's electrical meter. Commercial and public parking garages could have similar systems, with the cost of electricity used added to the parking fee.
- 4-15-6 In order to meet the mobility needs of Basin residents for long trips outside the Basin, the private market is expected to respond with a greater array of rental/lease arrangements and vehicles. Similar markets already exist for renting of recreational vehicles. Markets are also expected to develop for the rental/lease of electric vehicles for travelers to the Basin. Increased monitoring of incoming conventional vehicles at the Basin border would be needed.
- 4-15-7 Alternatively, dual electric/conventional vehicles could be developed, though the added weight might reduce efficiency. To the extent that the nationwide vehicle fleet adapts to using a variety of liquid fuels, including methanol, travelers could use the methanol-burning capability of their vehicles while in the Basin.
- 4-15-8 One mitigation measure is siting superconducting magnetic energy storage (SMES) facilities in-Basin, so that in the event of a transmission breakdown, a local supply would be readily available. Use of conventional backup generators for emergency needs could continue, but with methanol or other clean fuels, so as not to reduce Basin air quality. Similarly, emergency response vehicles should also be fueled with methanol.
- 4-15-9 Over-reliance on a particular generation type can be mitigated by proper resource planning, including purchase of power and capacity from non-Basin utilities and from independent power producers.
- 4-15-10 A greater emphasis should be placed on the development of in-Basin generating resources such as solar and wind power. Development of these resources over what the electrification strategy anticipates will require additional research and development efforts. It may be necessary to use in-Basin solar and wind power resources more extensively, even though they are more expensive, in order to overcome regional constraints on production and transmission of power to the Basin.

- 4-15-11 Greater in-Basin water conservation efforts could help to offset water needs of the out-of-Basin generating plants. Enactment of stringent air quality standards for out-of Basin plants producing power for the Basin could minimize emissions and preserve air quality in areas where power plants are sited.
- 4-15-12 Increased reliance on in-Basin generation resources such as wind, solar, hydroelectric, and fuel cells could mitigate competition for out-of-Basin generation resources. Cooperative agreements among regions for allocation of power, water, and non-renewable fuel resources could forestall competitive demands on these resources.
- 4-15-13 Switching from petroleum fuels to natural gas is a strategy to help mitigate the impacts of petroleum fuels because natural gas is less polluting. Increased demand for natural gas in the residential and commercial sectors is expected to be substantially offset by increased efficiency of household appliances and commercial processes. Also, more efficient management techniques applied to all energy resources will help mitigate these impacts.
- 4-15-14 In order to conserve natural gas supplies, coal could be used to manufacture synthesized natural gas, and to produce methanol . Impacts from these synthetic fuel resources would occur outside the Basin at locations yet to be identified.

SECTION 4-16 RECREATION

Providing recreation is a function of local, state, and federal governments who propose, plan, and acquire recreational sites. Considerations by these entities should be made in balancing urban areas with open space for recreational facilities as well as preserving existing facilities.

SECTION 4-17 HUMAN HEALTH

- 4-17-1 No mitigation measures are necessary.
- 4-17-2 Mitigation measures for processes and operations switching from reactive solvents to exempt solvents are possible in cases where the substituted solvent is a carcinogen. Proposed Rules 223 and 1401, although they are not a part of the AQMP, would help mitigate adverse impacts due to increased emissions of toxics.
- 4-17-3 Current state and local agency policies (and proposed rules), with regard to emission of toxic air pollutants, are risk-based and some operations may require reductions in these emissions. For those facilities which emit toxics, the addition of add-on control devices would be required by proposed District rules. Add-on controls would be an effective measure to reduce emissions of toxic compounds to a level of no significance. Proposed District rules would ensure against air toxic impacts from industrial and manufacturing operations. A procedure to require mitigation of significant emissions of toxic air pollutants thus already exists and can be refined in the future.
- 4-17-4 Local agencies should make efforts to reduce the amount of wastes generated by encouraging/requiring recycling and use of less waste-producing processes. Use of clean fuels or electricity to power vehicles transporting the wastes outside the Basin would mitigate the impacts of increased transportation emissions. Proper handling and storage of wastes can also help reduce the potential for any adverse impacts.
- 4-17-5 No mitigation measures are necessary.
- 4-17-6 No mitigation measures are necessary.
- 4-17-7 No mitigation measures are necessary.
- 4-17-8 No mitigation measures are necessary.
- 4-17-9 In the event that significant risks are evident from a methanol fuel program, the District, other local agencies, and state and federal agencies would assess the methanol fuel program to determine whether it should continue, be delayed until mitigation measures (e.g., catalytic devices) are possible, or not be implemented.

- 4-17-10 Field test demonstrations indicate that, under most conditions, formaldehyde emissions (as measured by aldehyde emissions) can be mitigated below the exposure levels permissible to workers (SCAQMD - 1135).
- 4-17-11 Because District authority over mobile sources is limited, mitigation of potentially adverse impacts from these sources will have to be coordinated with ARB and local agencies.
- 4-17-12 Measures to reduce the potential risk of upset can be taken to reduce the probability of exposure. Proper safety and handling procedures will also help mitigate the potential for adverse health effects. Ammonia slip from faulty SCR design can also be alleviated through proper maintenance and appropriate application of SCR technology.

SECTION 4-18 ECONOMIC IMPACTS

- 4-18-1 Economic incentives alone will encourage most affected firms to select the least costly method of control, helping reduce the economic impact of regulation. Higher production costs in the short run will also stimulate the development of economical low-VOC coatings, solvents, and adhesives. The development of new products will tend to minimize the long-run economic impacts of the control measures.
- 4-18-2 Although the price increases due to control costs cannot be directly mitigated, consumers can mitigate the impact of increased fuel expenditures by reducing driving and purchasing more fuel-efficient vehicles. Increased prices for petroleum based fuels will make clean fuels such as methanol more cost-competitive.
- 4-18-3 The development of new and more economical control technologies should be stimulated by introducing generous tax credits or government subsidies.
- 4-18-4 Higher electric rates could encourage conservation, reducing electricity generation, and hence further reducing emissions. About 20 percent of the electricity consumed in the Basin is produced in-Basin with fossil fuel.

- 4-18-5 This impact could be mitigated by methanol fueling for IC-powered cogeneration. However, considerations such as methanol fuel costs and retrofit costs may make IC-powered cogeneration economically infeasible. A further alternative is the use of external combustion engines, such as the Stirling engine. External combustion engines burn fuel in the open air, achieving more complete combustion and burning at lower temperatures. These features allow external combustion engines to operate with inherently lower levels of hydrocarbon and NOx emissions.
- 4-18-6 Market trends indicate that propane barbecues are gradually replacing their charcoal and natural gas counterparts. Electric equipment is also slowly displacing gasoline-powered garden and other hand-held tools. Thus, reducing emissions from the use of starter fluids and petroleum-fueled domestic equipment will only accelerate existing market trends brought about by rapid technological change.
- 4-18-7 Waste-disposal fees should be collected on a per capita basis regardless of facility use in order to remove the incentive for self-composting and illegal dumping. Truck emissions from refuse hauling would be reduced by substitution of clean fuels.
- 4-18-8 In order to mitigate the constraining effect on growth that limited sewage treatment capacity could have, a series of water conservation measures should be implemented by water purveyors and local agencies. Reducing the number of gallons of sewage per person would allow additional residents and businesses to be served without increasing treatment capacity. Measures to cut water use include toilet dams to reduce the water volume per flush, low-flow showerheads, restrictors on faucets, and surcharges on water bills for customers not reducing consumption. An added benefit of such a program would be conservation of water resources.
- 4-18-9 The cost impact of reformulating pesticides and their applications could be minimized by restricting the use of this control measure to the months of high ozone concentration.
- 4-18-10 The digester gas should be processed to achieve a uniform, pipeline-quality standard. It could then be put into gas utility distribution lines.

The air quality impacts of shipping chemical fertilizer are expected to decline as agricultural land is developed.

- 4-18-11 Tax credits for resources devoted to advancing the state of the art in air pollution control technologies could speed technological breakthroughs.
- 4-18-12 Mitigation would be an alternate technology that results in attainment of equal emission reductions.
- 4-18-13 The PUC should set natural gas prices below the price of the lower sulfur content oil, in order to make natural gas the preferred fuel. Emissions would decrease with the substitution of gas for oil.
- 4-18-14 Investments in transmission infrastructure maybe mitigated by simultaneously undertaking investments in underground storage tanks. These investments can be recovered through rate increases.
- 4-18-15 Sufficient funds should be earmarked at the federal, state, and/or local level to help ensure that transit operators systematically convert their fleets to clean fuels, to increase efficiency and convenience (without sacrificing route expansions and other service improvements).
- 4-18-16 Since electric vehicles generally have longer operating life, lower maintenance costs, and higher reliability, these characteristics could generate cost savings for transit operating agencies. Electrified transit buses may attract new patronage, thus resulting in increases in revenues and decreased demands for subsidy. With less noise and smoke, electrified transit buses would lead to better public acceptance in densely populated areas.
- 4-18-17 Retrofit of diesel buses should be required as part of their normal life-cycle maintenance. Typically, bus engines are replaced three times during their life times. Changes in federal transit funding policies can be sought to accommodate higher subsidies.
- 4-18-18 Commercialization of emerging vehicle technologies could make some of the control measures economically viable. Tax credits and subsidies could accelerate major breakthroughs in vehicle technology. Increased use of alternative fuels could aid in reducing the U.S. dependency on imported oil and serve as a stimulus to the domestic

economy. Efforts to develop a formaldehyde catalyst, such as those in progress at ARB, should be strengthened. Also, ARB should set a formaldehyde emissions limit on methanol equal to formaldehyde emissions from gasoline.

- 4-18-19 Since there are no economic alternatives to international water transportation of goods, no mitigation measures can be identified at this time.
- 4-18-10 Moderate or significant increases in the price of air transport could make other transportation options (for example, railroads, trucks, and automobiles) more competitive. While greater use of trains could reduce emissions even further, increased use of trucks and automobiles is likely to have the opposite result.
- 4-18-21 Affected industries and consumers could avoid some of the increase in the price of railroad transportation by switching to more economical transportation alternatives.
- 4-18-22 A cooperative effort among the District, ARB, product manufacturers, and end users should be established to fully assess the constraints and options available for implementation of the Tier II controls. The District Technology Advancement Office has been set up to test and promote air pollution control technologies that may be applied in the Basin.
- 4-18-23 Implementation also requires the development of a basin-wide outreach and monitoring program. The program should disseminate information and educate business owners and operators about alternative or improved technologies that can be successfully substituted for reactive solvent processes or products.
- 4-18-24 Potential health impacts of reformulated or substitute coatings and solvents should be investigated. Only compounds which do not significantly affect health or the environment should be allowed. Preservation of historic local architecture could be accomplished through special programs developed jointly by the District and local historic preservation organizations.
- 4-18-25 Stricter enforcement with significant penalties, such as loss of driving privileges, could reduce the impact of illegal registrations.

- 4-18-26 Implementation of alternative fuel technologies would be stimulated by the District's Clean Fuel Program. This is a \$30.4 million program which began in fiscal year 1988 and is scheduled to continue until the end of 1993. Its main purpose is to expedite commercialization of innovative technologies as replacements for conventional petroleum-based fuels.
- 4-18-27 To reduce health impacts of lead exposure from lead-acid battery use, alternative types of batteries, such as nickel-based batteries, should be developed. Research and development to increase EV range and performance should be expanded. Solar vehicle development should also be accelerated since extended energy sources are not required.
- 4-18-28 Implementation of the key elements of the Clean Fuels Program during the next five years will result in a foundation to facilitate commercialization of alternative fuel technologies. The knowledge gained from the Clean Fuels Program and other research efforts will help develop additional technologies that will allow the achievement of Tier II emission reduction goals.
- 4-18-29 A portion of the emission charge collected could be refunded to sources that have achieved emission levels below the specified cutoff level. Grants could also be awarded to companies which demonstrate the development of less polluting technology to reduce emissions even further. A cap could be placed on the total amount of emissions that can be applied for the payment of emission charges for each firm. Once that cap level is reached, emission reductions would be mandatory. This would also increase the likelihood of emission reductions. A phase-in schedule could also be adopted to ease financial hardship which may arise. Anticipated breakthroughs in technology may facilitate future emission reductions at lower costs.
- 4-18-30 Emission reductions could become technology-forcing at the maturity of new technology; that is all subject sources are required to conform to the emission level that the technology can offer.
- 4-18-31 To mitigate the impacts of telecommuting on low income workers, a training program to teach information skills should be instituted. Increased labor enforcement efforts would be needed to prevent telecommuting from becoming a system of home-based piece-work.

- 4-18-32 State tax credits for individuals or businesses who purchase vans for vanpooling provide an incentive to purchase these vehicles by effectively lowering their price. Preferential parking should be provided by employers to people who carpool or vanpool.
- 4-18-33 Lost tax revenue to the state can be made up either by reduction in other programs or by state tax or revenue increases. Providing increased transit and jobs/housing balance also eases the burden of higher parking costs, especially on the lower income group.
- 4-18-34 The fiscal impact on local governments of the increased public investment in transportation infrastructure could be offset by state and federal funding. Also, since these TCMs increase overall vehicle fuel efficiency, the gasoline and diesel fuel tax could be raised, leaving motorists no worse off. Airports could finance their increased capital spending by raising landing fees. Also, improved traffic flow reduces accidents and lowers public safety and traffic control costs.
- 4-18-35 The increase in housing and land values, resulting from improved air quality from the AQMP measures, will raise property tax revenues for local governments. The revenue increases can mitigate public investment in facility capital improvements. Hence, the fiscal impact on local governments through crowding out of other investments and services can be reduced.
- 4-18-36 Increased emissions due to substitution of truck for rail freight could be reduced or eliminated by the use of clean fuels for truck freight.
- 4-18-37 RMP measures such as those which increase transit use, ridesharing, and telecommuting would bring about a significant decrease in home-work vehicle trips by the year 2010. Reduced vehicle use would decrease the demand for vehicles and for vehicle services such as auto repair and gasoline. As a result, output, employment, and income in such sectors as auto manufacturing, auto parts and repair, and petroleum refining and sales would decline, both in and outside the Basin.
- 4-18-38 Contraction of auto-related sectors will be partially compensated for by growth in other transportation sectors such as rail construction, bus and van manufacturing, and telecommuting center construction and equipping. Savings to consumers from reduced auto use are expected

to be spent on other consumer goods. Therefore, a net decline in economic activity is not expected, though shifts in sectors will occur.

- 4-18-39 Since the AQMP measures, including those which affect local governments, are an attempt to meet the federal and state air quality standards, state and federal governments are potential sources of revenues to mitigate these impacts. These governments should make sufficient funds available for implementation assistance. Further discussion of specific impacts on local governments and their mitigation is presented in the sections on the Growth Management Plan and Regional Mobility Plan in this FEIR.
- 4-18-40 Job retraining programs for low-skilled workers to acquire skills for higher-skilled jobs, especially in the service sector, should be undertaken by local governments, employers, and service agencies. Public school education should be enhanced to provide the knowledge necessary for jobs in a service-oriented economy. Public sector business development programs can expand the opportunities for small and medium-sized businesses, which provide a large proportion of new jobs.
- 4-18-41 Greater economic activities and employment opportunities are benefits. Increased population pressure on recreational resources can be mitigated by improving access through public purchases of recreational land, and by providing off-peak leisure time through implementing alternative work scheduling. Increased public service needs can be met by expanding facilities and services; such expansion could be financed through increased development fees and user fees, e.g., sewer fees. However, expansion of infrastructure could also induce additional growth and urbanization.
- 4-18-42 To help reduce the initial capital cost impact of purchasing energy conservation devices, cash rebate programs of electric and gas utilities should be expanded. The Public Utilities Commission, which has regulatory authority over private gas and electric utilities, and those municipal governments which direct their own utilities, are encouraged to implement such programs. Reauthorization of tax credit programs should be considered by state and federal governments.

- 4-18-43 Finally, energy efficiency should be considered by lending institutions in credit decisions, allowing applicants to qualify for larger loans based on reduced energy costs. This program assumes that demand for recycled materials, in both out-of-state and international markets can be tapped. Research institutions in both public and private sectors are encouraged to find new uses for recycled materials. When local recycling programs experience revenue shortfalls, refuse collection fees can be increased.
- 4-18-44 Although technological innovation and product development are not activities that can be made entirely to order, their pace is likely to be influenced by proper economic incentives. Introduction of tax credits, for example, could stimulate development and adoption of new technologies by industry.
- 4-18-45 Coordinated efforts among the District, ARB, coating manufacturers and end users to encourage technological breakthroughs could facilitate the timely development of cost-effective control measures.
- 4-18-46 Implementation of energy policies by could help reduce demand for electricity. Strategies could include the following: implementation of energy conservation measures in the residential, commercial, and industrial sectors; strong business participation in the development and commercialization of fuel cells, electric vehicles, and energy storage technologies through the District's Clean Fuels Program; and seeking federal and state tax incentives to hasten the development and commercialization of promising energy alternatives (e.g., wind and solar power).
- 4-18-47 The emission charges system should be implemented on a trial basis in selected sources in order to find the proper level of the charge. Phased implementation, i.e., setting a timetable of steadily rising charges over future years, could also ease the adverse impacts. This will be especially true for consumers who do not wish to pay the cost of converting their gasoline engines to liquified petroleum gas or compressed natural gas. Increased research and information on the cost-effectiveness of clean fuel vehicles can reduce consumer pessimism.
- 4-18-48 Socioeconomic and public health impacts from plant closures and increases in unemployment should be mitigated by the use of some or

all of the following measures: unemployment insurance, job training, relocation assistance, job placement activities, and career counseling. Some of these actions can be taken by employers and some by the state Employment Development Department (EDD). The EDD would have the major responsibility of mitigating the impacts of unemployment by improving employment opportunities for laid-off workers.

4-18-49 Relocating laid-off workers in other sectors of the local economy may mitigate some of the unemployment impacts. Unless the re-employment activities are successful, the results shown above would constitute unmitigated adverse impacts. For products produced by regulated industries, such as gas or electric utilities, the impact of price increases from compliance costs could be cushioned by extending the "lifeline" portion of electricity or gas consumed. Thus a greater initial, low-priced portion of electric or gas service would be allowed. Approval by the California Public Utilities Commission would be required for increasing the lifeline allowance.

4-19-50 Price increases due to compliance costs may encourage consumers to shop for substitutes. Thus consumers will tend to re-orient their purchases toward less polluting products. Though this effect does not give the consumer, especially the low and moderate income consumer, more purchasing power, it does act to limit the degree to which compliance-induced price increases can reduce purchasing power.

SECTION 4-19 EARTH

4-19-1 Local jurisdictions can help mitigate the impacts resulting from construction activities through zoning laws and by designating and protecting open spaces. Builders and developers should be required to mitigate the impacts of development and construction by using grading plans sensitive to the local topographical features.

SECTION 4-20 AESTHETICS

4-20-1 In implementing the proposed project, community regulations should be strictly adhered to regarding aesthetic aspects of all development. During construction, any natural vegetation that is removed should be

replaced with some native vegetation as well as ornamental landscaping. Designing transformer facilities to blend in with surroundings and placing electric lines and/or cables underground should be done for aesthetic purposes.

SECTION 4-21 ARCHAEOLOGICAL/PALEONTOLOGICAL/HISTORICAL

- 4-21-1 To determine whether archaeological or historical resources exist, and to evaluate their significance, sensitive cultural areas should have records checks and site surveys completed as part of project planning. Any recommended mitigation measures shall be implemented prior to ground disturbing activities. In the event that subsurface cultural resources are encountered during project construction, work should be temporarily diverted until such materials have been evaluated and any necessary data recovery activities conducted.
- 4-21-2 On the basis of records checks, literature searches, and/or field surveys areas found to contain potential paleontologic resources should have construction grading monitored by a paleontologist. In the event that fossils are discovered, arrangements for their salvage, preparation, and curation should be made in such a manner as to minimize construction delays.
- 4-21-3 For existing structures which may have potential historical value, attempts should be made to preserve the site while developing the property in a manner generally commensurate with existing plans.

ATTACHMENT 9

URBAN AIRSHED MODELING

Introduction

INTRODUCTION

Specific comments submitted by the Southern California Gas Company (SoCalGas) were prepared by SRI International. The comments submitted to the District failed to recognize that the UAM with the most up-to-date Carbon Bond Mechanism (CBM-4) is the EPA-recommended modeling technique for ozone SIP preparation. A significant body of knowledge has been made available in the past decade on the theory and application of UAM, particularly in the South Coast Air Basin. The District is actively involved in the enhancement and refinement of the modeling technique and data gathering/processing. Even though most of the issues raised by SRI can be resolved by consulting available technical documents prepared specifically for UAM, District staff has prepared the following point-by-point response:

Sensitivity Analysis

SoCalGas requests an explanation as to why the sensitivity analysis was not performed on the model before the AQMP was released. The sensitivity of model predictions to most model input parameters and emission perturbations has been examined and documented in a number of documents (a list of references is attached at the end of this response). For the 1988 AQMP Revision, the District has completed a number of sensitivity runs to determine the impacts of boundary conditions, initial concentrations, atmospheric stability, combinations of specific measures, across-the-basin NOx and ROG reductions, and concentrations of radical-forming species, and windfield perturbations. These UAM sensitivity runs were conducted as diagnostic analyses to provide confidence of model predictions and to estimate the approximate effectiveness of controls. Because most of these runs were conducted using intermediate data files (detailed final data files were not available at the time and were not necessary for diagnostic analysis), it is very difficult to document and to formally present the results here. However, staff intends to publish the results of these sensitivity runs in technical journals for peer review. The model performance evaluation was conducted with participation of ARB, EPA, and private sector. SoCalGas did not choose to participate in that process. District invited the modeling

community to two modeling workshops in mid-September to discuss with staff the details of the sensitivity runs. SRI did attend one of the two workshops, but did not contact District staff on this matter.

Value of UAM Predictions

SoCalGas stated in its comments that errors of at least 30 percent and the lack of sensitivity analyses should restrict the model use to trend analysis, not attainment determination. The model performance can not be described accurately with a single parameter. Further, the exact meaning of the 30 percent error estimate is unclear. While staff agrees that there is uncertainty associated with absolute value peak ozone predictions, particularly for cases associated with great emission reductions, the UAM is recommended by EPA for use in regulatory applications to determine compliance.

Any scientific prediction is a "best guess" at this time rather than a confirmed solution. Actual long term strategies may very well change as our knowledge of the subject increases; scientific predictions will not cease once the AQMP is published. However, the federal AQMP process requires that a "confirmed solution" be provided. The UAM has been approved for use in this regulatory context after 11 years of testing by the EPA and others. Although the UAM was updated recently in chemistry and numerical advection, the basic model has not been changed substantially during those 11 years. Any significant changes to the UAM will require considerable testing and evaluation by the EPA before the new UAM could be used in the present type of regulatory context.

Use Different Models

UAM is an episodic photochemical dispersion model which requires detailed aerometric and emission data as input. It is not appropriate for use in annual NO_2 and PM_{10} analysis because of the lack of detailed data for 365 days of a year. Further, the gas-phase chemistry used for ozone modeling in UAM is inadequate for aerosol and NO_2 predictions. The annual PM_{10} dispersion model and the annual NO_x model developed by the District are state-of-the-art analytical techniques for analysis of these pollutants. The Chemical Mass

Balance Receptor model developed for EPA and ARB, and the advanced receptor modeling techniques used by the District, can provide additional data for PM₁₀ source apportionments. The June 5-7, 1988 episode used for ozone modeling is not appropriate for short-term NO₂ analysis simply because it is not a peak NO₂ episode. Actually, peak ozone and NO₂ episodes would virtually never occur at the same time. The District is planning to commission a study to include detailed aerosol treatment into the UAM so that it can be used in the future to assess the impact of ozone and PM₁₀ concurrently.

The ERT/SAPRC mechanism, which characterizes the rate of sulfate and nitrate formation, was used for the PM₁₀ analysis, while the CB-IV mechanism was used for the ozone analysis. The AQMP modeling process took more than two years to accomplish and the resulting efforts represent the state of knowledge concerning air quality modeling during those efforts. In fact, the PM₁₀ modeling efforts were developed long before the ozone model was updated to include newer chemistry. The sulfate and nitrate transformation mechanisms were prepared for use in the PM₁₀ dispersion model approximately eight months before EPA released the CB-IV mechanism.

It is necessary to consider the overall PM₁₀ modeling approach in judging the importance of the choice of transformation mechanism. If no dispersion model was used, a source by source linear rollback would be employed, which would relate the concentration contribution of each source to the total emissions released from that source. This unfortunately would not take into consideration the time and location of emissions, the effect of stack height and plume rise, or the location of receptors in relation to the sources. A dispersion model is employed to account for these processes, in effect adjusting the linear rollback ratios (concentration/emissions) to account for dissimilar impacts of different sources. To properly model a secondary species, such as sulfate or nitrate, a time schedule for transformation from gaseous precursor to secondary particle phase must be included in the model. In earlier versions of this type of modeling effort for secondary species, a single average transformation rate was used throughout the basin to account for the time delay for gaseous emissions to become secondary particles. The District staff is working on an approach to improve upon that by including a realistic rate based on likely atmospheric conditions which could now vary in time and location.

The ERT/SAPRC mechanism is appropriate for this type of application.

The mechanism is based on a large set of chemical reactions. The rates for individual reaction steps were obtained empirically from laboratory and smog chamber results. The major difference between mechanisms (ERT/SAPRC and CB-IV) concerns the chemistry solution algorithm, rather than the chemical reaction steps or rate information. EPA observed similar performance for these two mechanisms under typical urban conditions (hydrocarbon mixtures) for nitric acid concentrations.

When employing the model results to predict future PM₁₀ concentrations, the fractional contribution of each source type does NOT remain constant. The ratio of absolute concentration contribution from a source type to the emissions from that source type remains constant. These ratios are referred to as the transfer coefficients for the source class. For any change in emissions from a specific source type, the resulting change in PM₁₀ concentration is predicted by multiplying the transfer coefficient for the source type by the emissions change. The change in organic aerosol contribution to PM₁₀ concentrations due to the use of alternate fuels is included. The concentration change is due to the reduction in primary organic particle emissions and reactive organic gas precursor emissions. These emissions changes are reflected in the emissions inventory projections.

The reactivity of the organics may change due to some control measures and thus affect the secondary organic particulate matter formation rate. In order to account for this effect, a dispersion model is needed which contains a secondary transformation mechanism for organics. A reliable mechanism for this purpose was not available for this AQMP process; however, it is hoped that such a mechanism would be developed prior to the next AQMP update.

The dispersion model was used to predict long-term pollutant concentrations (monthly and annual averages) and is therefore not very sensitive to the effect of altering ozone concentrations, which are typically high during only a small fraction of the modeled hours. While it is accepted that controls which greatly reduce ozone concentrations will have some effect on the secondary PM₁₀ formation potential, and that modeling for future year PM₁₀ concentrations should include these changes in atmospheric conditions, this is not practical for this AQMP modeling approach. The PM₁₀ model development and application was performed long before ozone model results were available. Even if the ozone results were available, these results only consider a single episode and it would be nearly impossible to translate this information to gridded concentration estimates for every hour of the year.

In addition, the set-up and computer time required to run many additional future scenario model runs (for example, considering controls which affect the spatial distribution of emissions, such as NO_x emission changes due to changes in traffic patterns) is beyond the scope of the present study. One of the major reasons why this type of model was used is that it can provide long-term pollutant concentration predictions inexpensively. More sophisticated models could have been developed; including many non-linear processes; however, these models could not be applied for long-term averages because the time step in the model would have to be shortened to approximately one minute instead of one hour. This would require an extensive amount of computer time.

The objective of the AQMP modeling approach is to assess the effect of controls on air quality. The changes in atmospheric conditions affecting formation potential is not as important to PM₁₀ concentrations as the changes in emission rates from the major sources of PM₁₀. The omission of the effect of ozone concentration changes on secondary transformation rates will add to the uncertainty of the model results. This will cause the transformation rate to be overpredicted for a handful of hours, and is therefore a minor conservative factor which is included in the results. Therefore, the District staff believes that the omission of ozone changes would not significantly change the results of source apportionment for PM₁₀ nitrates.

Chemistry

SRI could not readily locate information that could be critically examined on the atmospheric chemistry module of the UAM. In fact, EPA made available the documentation of the CBM-4 through the release of the new version of EKMA model in early 1987. Many state and local agencies have applied the chemistry and the mechanism.

Grid Cell Resolution

Although a finer resolution in the horizontal dimensions of the grid squares may provide better simulation results, the gridded emission inventory is not resolved to less than 5 km. Thus, unless the emission inventories are more finely resolved, any changes to the UAM will give essentially the same results. This would be true with any grid model, including the VEGAS model. The paper by Tran and Cuq (1988) shows that the VEGAS model and the UAM give essentially the same ozone results. The VEGAS model should be recommended as a research tool until further testing is performed to evaluate the effects of such an algorithm. If a finer horizontal resolution is needed, then the question arises as to what horizontal resolution is good enough. Testing of horizontal grid resolutions in the South Central Coast modeling studies show that going from 2 to 4 km, the UAM gave essentially the same results. The model predictions begin to deviate at 8 km grid resolutions.

Transport

It is well known that the SHASTA algorithm employed in the UAM can produce extra mass under certain circumstances. This led to the use of the Smolarkiewicz algorithm in the UAM. The paper by Brost et al. (1988) discusses several experiments which compared the Smolarkiewicz advection algorithm with more sophisticated algorithms. Since the Smolarkiewicz algorithm is an advective algorithm, it does not carry a diffusion term specified by the diffusion coefficient (K_h). Brost et al. (1988) performed the experiments using a value of zero for K_h , which can explain the overpredictions in the observed plume concentrations. The horizontal diffusion coefficient can range from 50 to 50000 m^2/s .

Boundary Conditions

Since the general wind patterns for the three-day period were generally westerly flows, it was important that the western and southern boundaries be specified as accurately as possible. The other horizontal boundaries

represented outflow boundaries. Without air quality measurements, estimates of elevated pollutant concentrations in the aloft layers would be purely speculative. Any UAM simulation using higher pollutant concentrations aloft can only be treated as sensitivity runs.

Model Performance Evaluation

As stated in the AQMP modeling protocol and the Clean Air Act Amendments, the goal of the control strategy is to reduce peak regional ozone levels, which will lead to lower ozone levels at all stations. The performance criteria goals are developed to evaluate peak regional predictions. The UAM is the only EPA recommended guideline air quality model with stringent performance criteria. The use of the EKMA requires an analysis of the peak predicted ozone with the observed peak value. The acceptable performance goal is for EKMA is about the same for UAM. However, in contrast to the UAM, the performance criteria are not met, the EKMA can still be used in air quality analysis.

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ATTACHMENT 10

REVIEW OF CCEEB - NERA STUDY

February 1989

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SUMMARY

The California Council for Environmental and Economic Balance (CCEEB) commissioned National Economic Research Associates, Inc. (NERA) to evaluate the potential economic impacts of the 1988 Air Quality Management Plan. A Final Report prepared by NERA has been submitted to the District as part of the AQMP adoption proceedings. This attachment to the AQMP EIR Addendum presents a review of NERA's Final Report prepared by Dr. Jane Hall and Andrew Horwatt, Department of Economics, California State University at Fullerton. The review presented herein was commissioned by the District and is presented in its entirety.

The review contains an evaluation of:

- (1) The quantitative methodologies used in the NERA report, their suitability for each application, and if the values derived using each methodology actually represents what they are purported to represent.
- (2) The underlying assumptions used in the economic analysis portion of the NERA study to determine if the assumptions are reasonable in comparison to those of other researchers performing similar analysis.
- (3) The various methodologies and economic values to ensure that they were used consistently throughout the NERA analysis.
- (4) The conclusions to ensure that they follow logically from the facts presented.

As part of the process of public commentary on the Air Quality Management Plan, (AQMP) the California Council for Environmental and Economic Balance (CCEEB) commissioned a study on the economic impacts of the AQMP. This study was performed by National Economic Research Associates, Inc. (NERA). The CCEEB study concluded that severe, negative impacts will be felt by the Southern California economy as a result of the Air Quality Management Plan. Thorough review of the CCEEB study shows that it contains methodological flaws which seriously undermine its credibility as

an objective economic analysis. In addition, the authors of the report selectively interpret the meaning of many of the economic values generated in the study, and subsequently make misleading conclusions based on these erroneous interpretations. The economic "losses" described in the CCEEB report are not reduction from current levels of economic activity, instead they represent slightly slower rates of economic growth. When interpreted correctly, the economic values in the CCEEB report show that significant economic growth will occur in the Basin even with full implementation of the AQMP: employment, output and personal income in the local economy will continue to grow significantly after implementation of the Air Quality Management Plan. The methodological flaws and biased conclusions of the CCEEB study render it useless as a serious policy making input.

INTRODUCTION

In December, 1988, the California Council for Environmental and Economic Balance (CCEEB) presented the results of its study, "Economic Impacts of the Draft Air Quality Management Plan." The study was undertaken for CCEEB by National Economic Research Associates, Inc. (NERA). The CCEEB study estimated that the AQMP would cost \$14.8 billion annually while producing benefits of only \$2.6 billion. The study predicted that implementation of the AQMP would lead to lower levels of employment, economic output, personal income, and personal health in the South Coast Air Basin.

A thorough examination of the CCEEB study shows that this analysis was based on procedures which greatly overstated the costs and understated the benefits of the AQMP. In spite of these serious distortions of the benefits and costs of the AQMP, the economic values presented in CCEEB study will still show that significant economic growth will occur in the Basin after all proposed controls are implemented. Economic growth will be only slightly slower as a result of the AQMP. The CCEEB study misrepresents the meaning of many of the economic values generated in their analysis, and then presents misleading conclusions based on those values. For example, the study states, "there will be a net reduction of 55,700 Basin jobs" (p. 33). In actuality there will be no loss of Basin jobs. Values presented in Tables J-1 and J-2 show that in the base industries which will be affected by the AQMP, there will be an increase of 208,000 jobs in the Basin between 1984

and 2000 if the AQMP is implemented. Other examples of misleading conclusions of this type appear throughout the CCEEB report.

Whatever the origin of these erroneous conclusions, it is necessary for policy-makers to be aware of the significant shortcomings of the CCEEB report to seriously consider these limitations before using the study results as the basis for substantive policy decisions.

This report presents the results of an extensive review of the CCEEB study. First, the underlying methodology of the study is examined. Next, the erroneous conclusions of the study are presented and corrected. Finally, policy recommendations are provided based on the revised conclusions derived from the CCEEB report.

DISCUSSION OF METHODOLOGY

There are numerous weaknesses in the methodology of the CCEEB study which compromise its validity. Its most serious shortcoming is the failure to consider behavioral changes in response to price increases. A fundamental principle in economics is that people, both as consumers and as industry, respond to higher prices by reducing their consumption. This phenomenon known as the law of demand has been verified repeatedly through empirical research. A properly executed economic analysis should reflect this inverse relationship between price and quantity demanded. The CCEEB study assumed that 100 percent of control costs would be passed through, initially to industry and then to consumers. It implicitly assumed that neither consumers, nor industry would alter their consumption patterns in response to the increased prices which result from control costs. This assumption that behavior will not be modified is a grievous methodological error that carries through the entire CCEEB study. All subsequent analysis which follows from these estimates of the AQMP control costs must be considered flawed.

CCEEB's failure to consider the mitigating behavior of buyers is shown in two different aspects of their methodology: 1) failure to consider price elasticity of demand, and 2) use of a non-interactive economic model. Both of these factors caused the costs of the AQMP to be overstated. These points will be discussed in order.

The study states, "in fact all of the costs will ultimately be borne by households" (p. 4). This statement shows a blatant disregard of price elasticity of demand. Price elasticity is a measure of the reduction in quantity demanded in response to a price changes. Empirical economic research has shown that in virtually all cases some, or most, of the adjustment is in the form of reduced use of the product and therefore the selling firm absorbs part of the additional costs. This adjustment process is the same whether the buyer is a consumer or another firm. It is important to note that adjustments often lead to innovation and the provision of new technologies - new options, rather than making do with less. This failure to consider the effects of demand price elasticity causes the estimated impacts on households to be exaggerated. The study's authors rationalize their omission by claiming that the information is not available (Appendix G). In fact, this information is readily available. Authors of similar studies have used price elasticities from research such as Houthtakker and Taylor's widely known work, Consumer Demand in the United States. In addition, for two key industries, refiners and electric utilities, California specific data are readily available. It should be noted that the analysts who performed the CCEEB study employed the concepts of price elasticity when they could use it to support their position. On page 47 and in Appendix N they acknowledge that electricity usage and vehicle miles of travel will decrease as their prices increase, an assumed result of the AQMP. This reduction in electricity and auto usage supposedly then increase the projected improvements in air quality from the AQMP.

The CCEEB study is apparently based on a non-interactive method of analysis. (No where is their methodology clearly described). Interactive models are the preferred approach for analyses of this type where general economic changes in an integrated economy are quantified. The primary advantage of interactive models over other analytical techniques is that they consider the interrelationships of the various segments which compromise an overall economy. By considering these interactive effects, the model can, to some degree, account for the changes made by different sectors of the economy in to response various economic factors. In the case of the AQMP, an interactive model can show how different sectors will respond to reduce any adverse impacts of the increased control costs and can account for the increased economic activity generated by investments in control measures and other related expenditures. The cost allocation procedure used by CCEEB underestimates the ability of firms to absorb the control costs. CCEEB's methodology causes the estimated control costs for the AQMP to

be greatly overstated. It follows that the negative basinwide economic impacts, predicted based on these control costs, are exaggerated.

In calculating their estimate of control costs, NERA used values from the Draft AQMP when they were provided. In some cases, however, their use of costs from the AQMP was misleading. In developing the control cost estimates in the AQMP, multiple alternatives for each measure were considered in determining a final value. For example, control of emissions from marine vessel tanks was estimated at \$400 - \$4,400 per ton of ROG reduced for housekeeping control and \$0 - \$934,000 per ton for ballasting operations. Using these figures and considering the various control options available, a control cost of \$1,800 per ton of ROG removed was developed for the AQMP. By contrast, CCEEB used a simple arithmetic average of highest possible costs of the control measures; they averaged \$400 and \$934,000 to determine their estimate of the control measure of \$467,000 -- a value 259 times greater than that in the AQMP. The use of these outlined values for control cost estimates caused control costs to be biased upward.

For control measures which were not assigned values, CCEEB assumed, "that the cost per ton removed for the control measures without costs is equal to the average cost per ton of the control measures for which control costs are given" (p. 8). They provide no explanation of why these average values represent valid estimates of the unlisted control costs. Without documentation, it is uncertain if these average costs represent reasonable approximations of the unlisted control measures. CCEEB states that these average estimates are probably underestimated because: 1) Tier II and Tier III measures are more speculative and therefore likely to be greater than average and 2) certain non-monetary costs have not been included in the cost estimates. Both of these explanations for a supposed downward bias of the AQMP control cost estimates are highly questionable. First, it is just as likely that Tier II and Tier III measures will have lower costs than the current average due to technological developments and increased efficiency in the production of pollution control equipment. Second, many of the control measures cited by CCEEB as imposing non-monetary "costs" have been lauded for the benefits which they bring to society. For example, they cite reduced labor productivity as one cost of the AQMP (Table B-1). Several of the control measures cited are known to improve productivity, particularly telecommunications. Decreases, rather than increases, in commuting time are likely to result due to ridesharing programs as the number of cars operating during commuting hours is decreased. Appendix F of the EIR

shows time savings benefits of \$15.3 billion for businesses and of \$16.9 for individuals resulting from the AQMP and two related measures in the Regional Mobility Plan (RMP) and Growth Management Plan (GMP).

The facts presented here clearly illustrate that CCEEB's estimates of the control costs associated with the AQMP are overstated. Since these costs were overstated it follows that all of the subsequent analysis based on these cost estimates was inaccurate. For example, the burden of the AQMP per household shown in Table 8 would be exaggerated. These inflated cost figures also would exaggerate the control costs faced by industry. The effect of the AQMP on government revenues (p. 23) would also be overstated since corporate profits would not be reduced to the degree described in the CCEEB study.

In addition to systematically overstating the control costs of the AQMP, the CCEEB study also understates the benefits obtained from improvements in air quality. Before proceeding further it must be noted that there is virtually unanimous agreement among economists that benefits are more difficult to measure than costs. Costs are more easily measured because they are borne by fewer individuals and can be more easily traced to specific expenditures. Benefits on the other hand, and are spread more widely across the population are often only indirectly associated with specific expenditures. The relatively small value for ozone health damage typifies this problem. While many people are adversely affected by ozone exposure, most do not have symptoms serious enough to warrant medical attention. Just because the ozone damage does not induce an expense, does not mean that a problem does not exist. The value for benefits in the Draft AQMP has been revised to \$7.4 billion in the Final EIR. This value, however, is extremely conservative and very defensible. For example, the revised benefits estimate included a \$6.2 benefit for improved health. This value was generated using cost of illness methodology, a procedure which produces a lower-bound estimate because it ignores such costs as the value of lost leisure or of general misery. There is widespread agreement among economists that willingness to pay measures provide a more appropriate basis for valuing health risks because they take these other factors into consideration. The procedures used by the SCAQMD caused the material damage estimates to be understated as well. Also not included in the benefit calculations of the AQMP were indirect benefits and those accrued to compliance of the carbon monoxide standard.

The repeated inability of NERA analysts to replicate the benefit values of the AQMP is odd. The information provided by SCAQMD when used in conjunction with the study by the Air Resources Board should have enabled them to replicate the values found in the AQMP Environmental Impact Report.

It has been clearly shown that the CCEEB study distorts the effects of the AQMP by the use of overstated cost estimates and understated benefit estimates. Even with these distorted values for benefits and costs, the CCEEB study provides information showing that the economy of the South Coast Air Basin will continue to grow substantially even if the AQMP is fully implemented. The CCEEB study states, "there will be a net reduction of 55,700 basin jobs" (p.33). In actuality, there will be no loss of Basin jobs, instead the rate of increase in Basin employment will be slightly less. Values presented in Tables J-1 and J-2 show that employment will increase in 12 of the 15 industrial sectors which will be affected by the AQMP; employment will grow from 1,154,000 in 1984 to 1,362,000 in 2000 (a gain of 208,000) if the AQMP is implemented. This represents job **growth** of 18 percent even in these impacted sectors. The forecasted employment level in these sectors for the year 2000 without the AQMP is 1,418,000. Thus, the employment level in the year 2000 with the AQMP is 96 percent of that which would have been achieved in the absence of pollution controls.

Figures presented in the CCEEB study also show that economic output in the Basin will increase if the AQMP is implemented. Applying NERA's employment/output ratio to the information in Tables J-1 and J-2 shows that output in the impacted sectors grows from \$34.8 billion in 1984 to \$41.2 billion in 2000 with full implementation of the AQMP, even if CCEEB's cost figures are used. Output without controls would be \$43.0 billion. Again, approximately 96 percent of the growth in output would be attained with implementation of the AQMP.

The assertions in the CCEEB study that the AQMP will reduce personal income levels and that this will produce lower health levels are clearly false and misleading. Values presented in the CCEEB report show that personal income levels in the Basin will grow significantly even with implementation of the AQMP. Estimates of the growth in personal income range from 87 percent to 102 percent, depending on the baseline values used. Personal income growth with controls will be only slightly less than growth without. Using the values presented in Table K-1, projected annual per capital income in the Basin in the year 2000 is calculated as \$24,420. No current baseline

value for personal income is provided in the CCEEB study, consequently it was necessary to construct this value using data from the report along with outside sources. Estimates of baseline personal income were calculated in two different ways: 1) using values for household income provided in the CCEEB report and 2) using per capital income values from the Draft EIR. Using the values for household income in Table H-1 of the CCEEB report along with 1987 population figures from California Statistical Abstract, average annual per capital income in the Basin is calculated to be approximately \$12,100. This produces estimates of personal income growth of 102 percent with controls and 109 percent without. Over 96 percent of the non-control personal income level is achieved with controls. Using the values for per capital income and population by county shown in the Draft EIR, average annual per capital income is calculated to be approximately \$13,000. Using this estimate, growth in personal income is 87 percent with controls and 94 percent without. Obviously CCEEB tried to masquerade a slightly slower rate of income growth as a reduction in income.

Since personal income will be increasing dramatically (i.e., between 87 and 102 percent) in the future, past research by NERA would predict that personal health care will improve, not deteriorate after implementation of the AQMP. CCEEB's assertion that reduced incomes will result in a reduction in health care is clearly false. The large percentage increase in personal income which will occur combined with improved air quality, should cause health care levels in the Basin to improve markedly, to argue otherwise borders on demagoguery.

The NERA analysts assumed that, "Reductions in so-called base employment -- such as factories or motion pictures studios-- will tend to have a snowballing effect as the decreased income for those employees is translated into decreased local spending which generates lower employment in the services and related sectors" (p. 29). Furthermore they state, " These impacts are well-known indirect effects of emission control costs, and models and data are available that allow one to estimate the size of the effects" (p. 31). These arguments are flawed in several respects. First, it has already been shown that Basin income will continue to increase in the future, with or without the Air Quality Management Plan. This increased income will translate into increased local spending on services and related sectors. Second, the magnitude of the "snowballing " effect caused by any reductions in base industry output should be minimal in an economy as large and complex as that of the South Coast Air Basin. The dynamism and diversity of

the Basin economy should mitigate any adverse impacts faced by the so-called base industries, i.e., any negative impacts will be reduced rather than magnified as slowdowns in one industry are balanced by increases in others. Third, the procedure used to estimate the size of the "snowballing" effect is questionable. Appendix J describes a "multiplier" which was used to calculate the changes in regional impact as a function of changes in base employment, however, no explanation of the derivation of this multiplier is provided. Unless the derivation of this employment multiplier controlled for the effects of population growth in the Basin, the multiplier would overstate the employment impacts of the base industries. A single value is used for the multiplier even though different base industries vary significantly in their employment/output ratios. Finally, the authors of the CCEEB study conveniently ignored the fact that employment in the South Coast Air Basin has continued to grow in spite of emission control costs, in contradiction to their dire prescription, "regions that impose higher costs on business--for example through imposition of higher environmental quality standards--will lose jobs" (Appendix J p. 2). The reason for the Basin's continued growth is also provided in CCEEB's analysis, "Economists have generally concluded that traditional market factors, such as relative labor costs, land availability, strength of local markets, and access to transportation facilities--are the most important factors in determining regional location decisions" (Appendix J p. 2). Environmental controls are only one factor in a firm's choice to locate in the Basin. The CCEEB study states that "most of the control equipment required for control will be manufactured outside the Basin" (p. 33), yet they provide no supporting evidence for this assertion other than the fact that control equipment for utility boilers is not manufactured in the Basin. In fact, the Basin is ideally suited to the development and manufacture of pollution control devices. Research by Management Information Services, Inc. found that pollution abatement and control expenditures, "provide impetus to emerging high technology growth industries; and they play a disproportionate role in the job market for selected scientific, engineering, and high skilled occupations" ("Economic and Employment Benefits of Investments in Environmental Protection," MISI, 1986). High technology companies and a highly trained, highly skilled workforce are major strengths of the South Coast Basin. As a result, the Basin could reasonably be expected to be a major producer of the pollution control equipment which would be used as part of the AQMP. The MISI study also found that business opportunities are created when users of pollution control equipment develop new technologies for captive use which can subsequently be sold on the open market.

CONCLUSIONS

Many of the conclusions drawn in the CCEEB study require additional examination and interpretation. A disturbing number of these conclusions are inaccurate and must be corrected. Most of these conclusions have already been discussed in the review of study's methodology and will not be covered further here. The remaining conclusions are covered briefly in this section.

The study refers repeatedly to "losses" in employment and income resulting from the AQMP. As has been shown, these "losses" are not reductions from current levels, instead they represent slightly lower rates of growth. Substantial economic growth will continue to occur even after pollution control measures are implemented. In contrast to the dreary "doom and gloom" scenario presented in the text of the CCEEB report, the underlying data show the South Coast Air Basin growing and prospering after implementation of the AQMP. Basin residents will enjoy increasingly higher levels of personal income and health after implementation of the AQMP.

The CCEEB report states repeatedly that the benefits of controlling ozone precursors are very low relative to their costs. They de-emphasize the necessity of controlling NOx but stress the comparatively high benefit-cost ratio of controlling particulates. Their reasoning neglects the fact that oxides of nitrogen are also precursors of particulates. Control of particulates would also entail control of NOx levels. Obviously control of NOx levels must be an integral part of any air quality plan which reasonably expects to satisfy EPA requirements, not only to control ozone, but to control particulates as well. In CCEEB's estimates of the benefits of controlling particulates, they assign no value to NOx control.

CCEEB takes a policy position that the AQMP should, "be seen as a series of choices, rather than as a (sic) immutable package that must be accepted or rejected" (p. 58). In fact, the AQMP is capable of evolving to accommodate changing conditions and technologies. By no means is it an immutable fiat levied upon the residents of Southern California.

RECOMMENDATIONS

Due to its far-reaching effects, the AQMP has the potential to substantially alter life in the South Coast Air Basin. Because of these broad potential impacts, substantial, in-depth analysis of the AQMP has been warranted. The AQMP and its associated Environmental Impact Report have considered the effects of the plan on seemingly all aspects of life in the Basin, including its impact on the Basin's economy. These analyses have shown that the AQMP will not have a major impact on the Basin economy -- economic growth will continue in the future even with full implementation of AQMP.

In many cases it can be argued that analysis of policy issues by outside consulting agencies is beneficial to policy-making process. In general, further study helps to provide additional information and clarification for difficult, complex issues such as the AQMP. Although additional information is usually helpful, it is difficult to take that position concerning the CCEEB study. The CCEEB study examines many issues concerning the AQMP which should be of great importance to policy-makers. As this view has shown, however, the CCEEB study has numerous methodological flaws which seriously compromise its credibility. In addition, it presents many misleading conclusions based on the economic values presented in the study. The obvious bias of the CCEEB study makes it worse than no study at all from a policy-making standpoint -- the inaccurate, inflammatory statements of the study are a disservice to the Governing Board of the SCAQMD and to the residents of the South Coast Air Basin. If the CCEEB study is to be considered at all in the decision making process, it should be used with caution: any conclusions drawn from the CCEEB study should be based on the correct interpretation of the economic values presented, rather than on the misleading statements provided by the study's authors.

ATTACHMENT 11

AQMP COMMENT LETTERS RECEIVED WITH NO EIR COMMENTS

| Company Names | Dates |
|----------------------------------|----------|
| 6 Flags Magic Mountain | 10/26/88 |
| A. Jabbour | 10/18/88 |
| Alden Kelley | 10/27/88 |
| Alison C. Fuller | 08/01/88 |
| Allison Burke | 12/19/88 |
| Amer. Lung Assoc. | 10/24/88 |
| Amer. Lung Association | 12/16/88 |
| American Gas Association | 10/25/88 |
| Anaheim Stadium | 10/27/88 |
| and Economic Balance | 09/23/88 |
| Applied Econometrics, Inc. | |
| ARB | 11/01/88 |
| Assembly Calif. Legislature | 12/14/88 |
| Association | |
| Association | 11/25/88 |
| Auto Chek | 10/27/88 |
| AVIS | 12/14/88 |
| Barbara Mauz | 10/27/88 |
| Betty Jean Lamb | 10/23/88 |
| BIA | 12/14/88 |
| Bill R. McGoveran | 12/16/88 |
| Board of Supervisors | |
| Brookfield Production | 11/09/88 |
| Bryan Allen-Testimony | 10/24/88 |
| Building Industry Assoc. | 10/27/88 |
| Cal Energy Commission | 10/27/88 |
| Calif. Council for | |
| Calif. Council for Envir. | |
| Calif. Energy Co. | |
| Calif. Fabricare Institute | 08/25/88 |
| Calif. Fabricare Institute | 12/14/88 |
| Calif. Manufacturers Association | 10/24/88 |
| Calif. Regional Water Quality | |
| Calif. Solar Energy Ind. | 10/10/88 |
| Calif. State Senate | 12/15/88 |
| Calif. Trucking Association | 09/28/88 |
| California Legislature | 12/15/88 |
| Cathedral City Calif. | 12/05/88 |
| Cecelia Scott | 12/13/88 |
| Chemical Specialities | 10/27/88 |
| Chervon USA, Inc. | 09/28/88 |
| Chevron | 10/21/88 |
| Chevron U.S.A. Inc | 10/25/88 |
| Chevron U.S.A. Inc. | 10/24/88 |
| Chevron U.S.A. Inc. | 10/24/88 |
| Chevron U.S.A. Inc. | 10/26/88 |

Company Names

Dates

| | |
|-------------------------------|-----------|
| Chevron U.S.A., Inc. | 10/25/88 |
| CIDA | 12/13/88 |
| City Council of LA | 12/16/88 |
| City of Agoura Hills | 05/15/88 |
| City of Anaheim | 10/31/88 |
| City of Chino | 10/26/88 |
| City of Commerce | 09/19/88 |
| City of Costa Mesa | 09/07/88 |
| City of Culver City | 09/22/88 |
| City of Duarte | 10/27/88 |
| City of Duarte | 12/15/88 |
| City of Fontana | 08/12/88 |
| City of Fullerton | 09/28/88 |
| City of Fullerton | 12/16/88 |
| City of Huntington Beach | 11/23/88 |
| City of Huntington Beach | 11/23/88 |
| City of Laguna Beach | 11/14/88 |
| City of Long Beach | 10/22/88 |
| City of Los Alamitos | 09/16/88 |
| City of Los Angeles | 10/22/88 |
| City of Manhattachan Beach | 10/24/88 |
| City of Palm Desert | 11/28/88 |
| City of Pomona | 10/27/88 |
| City of Rolling Hills | 10/06/88 |
| City of Santa Clarita | 01/23/88 |
| City of Seal Beach | 09/15/88 |
| City of South Gate | 10-25-88 |
| City of Tustin | 10/27/88 |
| City of Tustin | 11/01/88 |
| City Sanitation District | 12/16/88 |
| City Santa Monica | 12/07/88 |
| Coalition for Clean Air | 10/27/88 |
| Coatings Association | 09/28/88 |
| Commerce | 11/30/88 |
| Commuter Computer | 11/10/88 |
| Commuter Transportation Serv. | 11/10/88 |
| Control Board Los Angeles | 01/05/88 |
| County of Orange | 02/01/89 |
| County of Orange | 12/13/88 |
| County of Riverside | 09/28/88 |
| County of Riverside | 12/13/88 |
| Daniel Silver M.D. | 08/10/88 |
| Dave & Lauren Naslund | 12-17-88 |
| Department of the Army | 011/24/89 |
| Dr.&Mrs Newell Johnson | 10/28/88 |
| Dunn-Edwards Corp. | 09/28/88 |
| E.L. Yeager | 01/30/89 |

| Company Names | Dates |
|--------------------------------|----------|
| Earlene Whittington | 12/16/88 |
| Economic Balance | 10/27/88 |
| Economic Development Corp. | 09/28/88 |
| Ed Salisbury | 08/07/88 |
| Edwin B. Stegman | 12/14/88 |
| Elaine Stansfield | |
| Energy/Environmental Committee | 09/22/88 |
| Environmental and | |
| EPA | 09/22/88 |
| Federation of Labors | 10/28/88 |
| Fern Field of Brookfield | |
| Fort Hill Construction | 12/15/88 |
| Francis M. Wheat | 01/05/89 |
| GAMA | 01/31/89 |
| Gilbert Bishop-Testimony | 10/22/88 |
| Governments | 12/09/88 |
| Group Against Smog Pollution | 10/27/88 |
| Heater Technical Committee | |
| IECOC | 10/27/88 |
| Independent Power Corp. | 01/10/89 |
| Industrial Truck | |
| Inland empire economic Council | 10/04/88 |
| Jack Lynn-James Jones | |
| JALA Associates, Inc. | 12/09/88 |
| Janine A. Builder | 12/19/88 |
| Jann Edwards | 12/15/88 |
| Jeanne Troy of Brookfield | |
| Jennifer Sansone | |
| John G. Strasser | 12/06/88 |
| Joint Committee on The | |
| Joint Committte on The | |
| Joseph Palestina | 12/13/88 |
| Kim Abel | 12/19/88 |
| Kirkhill Rubber Co. | |
| Knott's Berry Farm | 10/27/88 |
| L.A. Chapter ZPG | 07/12/88 |
| L.A. District Attorney | 10/88 |
| LACTC | 09/30/88 |
| LACTC | 10/31/88 |
| Latham & Watkins | 12/15/88 |
| LAVAIA | 12/07/88 |
| Leslie Ann & Larry | |
| Manufactures Association | |
| Marc Dehsen | 10/07/88 |
| Marc Drehsen | 01/30/89 |
| Margaret A. Richner | 12/16/88 |
| Margaret V. Hugstrom | 10/25/88 |

| Company Names | Dates |
|-----------------------------------|-----------|
| Mary Barris | 011/16/89 |
| Maryl Jo Fox-Peltzie | 01/16/89 |
| Mayor Pro Tempore Abbe Land | |
| McClintock, Kirwan, Benshoof, | |
| McDonnel Douglas | 10/26/88 |
| Mr. Earl A. Skaugstad | 12/05/88 |
| Mr/Mrs Harvey Barrett | 10/27/88 |
| Mrs. Ann M. Egan | 12/05/88 |
| Mrs. Ann M. Egan | 12/05/88 |
| NERA | 10/20/88 |
| Nera | 12/15/88 |
| Norman Brooks | |
| Norri Sirri | 10/25/88 |
| Northwestern Mutual Life | 12/08/88 |
| O'Melven & Myers | 10/27/888 |
| of Orange County | 10/24/88 |
| of the Gas Appliance | |
| Olympic Chiropractic Office | 10/24/88 |
| Orange County Chamber of Commerce | 09/27/88 |
| Orbital Engine Co. | 12/16/88 |
| Palm Springs Chamber of | |
| Paul Cable-Cable Airport | 11/05/88 |
| Planning Director Association | |
| Precision Standard Time Inc. | 10/27/88 |
| Production | 10/25/88 |
| Production | 10/25/88 |
| Public Hearing | 12/15/88 |
| R.A. Nichols Engineering | 10/07/88 |
| Resident of Rancho Mirage | 10/24/88 |
| Robert B. Mooney | 09/28/88 |
| Robert Glenn Gragg | |
| Rochefort & Weston | 08/15/88 |
| RTD | 01/18/89 |
| Ruth Nelson | 09/02/88 |
| SAE Technical | |
| San Bernardino Associated | |
| Santa Margarita Co. | 12/13/88 |
| SCAG | 12/06/88 |
| SCAG | 12/06/88 |
| SCAG | 12/88 |
| SCAG'S Regional Advisory | 12/06/88 |
| SCAQMD | 08/12/88 |
| SCBMA | 12/15/88 |
| SCE | 09/28/88 |
| Scott Herbertson | 10/26/88 |
| Shoreh Organization & | |
| Sierra Club | 11/02/88 |

| Company Names | Dates |
|--|----------|
| Sierra Club-Angeles Chapter | 08/08/88 |
| Sierra Club-Angeles Chapter | 10/15/88 |
| So Cal Gas Co. | 10/88 |
| Southern Calif. Paint & Special Events Center/Organ | 10/24/88 |
| State of Calif. | 12/14/88 |
| State's Economy | 09/28/88 |
| State's Economy | 09/28/88 |
| Subway Terminal Building | 12/09/88 |
| Technologies, LTD. | 12/16/88 |
| Texaco Refining & Marketing | 10/27/88 |
| The Port of Long Beach | 11/02/88 |
| The Swimming Pool and Spa | |
| Tony Debellis | |
| Torgerson Jordon | 10/26/88 |
| Tuzzoline Janis | 10/27/88 |
| U.S. Dept of Transportation | 10/26/88 |
| Unocal Corp. | 10/27/88 |
| Walt Disney Co. | 10/27/88 |
| Walt Disney Co. | 10/27/88 |
| Wanda Sterner | |
| William J. O'Brien | 12/10/88 |
| William W. Busby | 12/15/88 |
| Zero Population Growth | 07/12/88 |

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REFERENCES CITED

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